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STUDY OF  
THE MANPOWER IMPLICATIONS  
OF  
FLEET MODERNIZATION PROGRAM (FMP)  
EXECUTION  
(MODMAN)

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FINAL REPORT

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MANPOWER IMPLICATIONS  
OF THE  
FLEET MODERNIZATION PROGRAM  
(MODMAN)  
FINAL REPORT

March 9, 1979

Prepared by:  
Information Spectrum, Inc. ✓

Prepared for:  
Chief of Naval Operations  
Department of the Navy  
Washington, D.C. 20350

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would permit MP&T implications to become visible early in the development process and that would allow for the complete integration of manpower considerations into the FMP.

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IN REPLY REFER TO

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JUL 13 1979

From: Chief of Naval Operations  
To: Distribution List

Subj: Manpower Implications of the Fleet Modernization Program (MODMAN) Report; promulgation of

Encl: (1) Manpower Implications of the Fleet Modernization Program (MODMAN) Study Report

1. The MODMAN study was initiated to analyze the compatibility of the Manpower, Personnel, and Training (MP&T) requirements determination functions with the Fleet Modernization Program (FMP) in order to develop more effective methods to ensure full consideration of MPT implications within the FMP process.

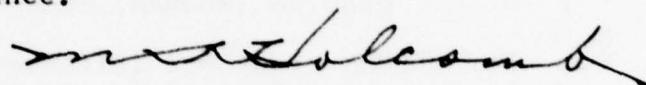
2. The study, forwarded as enclosure (1), analyzed the MP&T implications associated with the installation of ship alterations into existing platforms and developed procedures for the identification and availability assessment of MP&T requirements prior to ship alteration programming. The study concludes that MP&T requirements are addressed too late in the FMP process, that MP&T problems are inextricably connected with overall ILS deficiencies, and that instructions fail to provide specific responsibilities or coordinated guidance.

3. The study proposes recommendations for improvements to the overall FMP process necessary to provide a framework in which MP&T implications can be addressed, as well as recommendations which address ILS improvements to the FMP in general and MP&T considerations in particular. Specifically, the study recommends: provisions for adequate funding of cost and feasibility studies, development of Proposed Military/Technical Improvement (PMI/PTI) tracking system, institution of specific MP&T constraints and actions, assignment of specific organizational responsibilities, and coordination of necessary documentation changes.

4. Marginal resource requirements identified in the study were obtained by survey and are estimates only. The estimates represent the level of effort required to ensure the full consideration of MP&T and ILS implications within the FMP process. The recommendations raise the issue of whether additional resources are required or improvement within the ILS can provide the required level of effort. Reviewers and managers of programs connected with the FMP must carefully

consider Navy interests and independently assess what organizational, administrative changes might be made to alleviate problems identified in the study with minimal incremental resources. In the current climate of fiscal/manpower constraints, it is unlikely that separate implementation resources can be provided. However, at the same time, it is incumbent that we improve the FMP process to ensure that the fleet is provided with adequate MPT and ILS support.

5. Implementation of the MODMAN recommendations will be the subject of separate correspondence.



M. S. Holcomb

Vice Admiral, U.S. Navy  
Director, Navy Program Planning

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## EXECUTIVE SUMMARY

### A. BACKGROUND

High levels of interest have recently centered on the problem of equipment arriving in the Fleet without the trained manpower to support it. This concern has generated the requirement to forecast and control Operating and Support (O&S) costs early in the Weapon Systems Acquisition Process (WSAP). One of the largest segments of O&S costs is the direct costs associated with personnel. When indirect costs are included, plus the costs of personnel acquisition (such as recruiting and training) and disposal (such as retirement and mustering out pay), the cost of personnel becomes staggering. Further, the All Volunteer Force has created increased difficulty in acquiring sufficient numbers of high quality personnel.

As a result of the concern in this area, the Military Manpower versus Hardware Procurement Study (HARDMAN) was established as part of the Chief of Naval Operations (CNO) Studies and Analysis Program (CSTAP) for FY 76/7T to investigate and recommend improvements to the Navy's procedures for the assessment of Manpower, Personnel and Training Support (MP&TS) implications during WSAP. This study has been completed and a HARDMAN Project office has been established with the mission to insure that manpower and training analysis is conducted in a timely fashion during WSAP.

During the prosecution of the HARDMAN Study, the HARDMAN

Advisory Committee requested a similar investigation of the Navy's procedures for assessing MP&TS implications of the Fleet Modernization Program (FMP). Current procedures for analyzing the impact of ship alterations are insufficient. MP&TS requirements are determined too late in the ship overhaul planning cycle to assure adequate on-board skills for the operations and maintenance of the new equipment or systems. If MP&TS cost savings are to be effected, MP&TS assessments must be made as early as possible during the FMP process. Acquiring qualified people, developing training programs and facilities, and providing the skills required by a system under development often takes as much time as the development of the system itself. The MODMAN Study was established (CSTAP 77) to investigate the MP&TS problems associated with the backfitting of new systems/equipment into existing platforms.

The final report, prepared with contractor support by Information Spectrum, Incorporated, presents the findings and recommendations of the MODMAN Study. The report also presents a detailed analysis of the FMP process. The Study has resulted in proposed improvements to the FMP process itself as well as recommendations to fully integrate consideration of MP&TS considerations into the FMP process. Implementation of these proposed improvements will serve to identify MP&TS requirements, their magnitude and related costs, and

will serve to assess their projected availability prior to the programming of alterations for accomplishment within the FMP.

B. PURPOSE OF THE STUDY

The CNO directed the MODMAN Study to evaluate the existing MP&TS planning process as applied to the FMP and to develop more effective methods to insure full consideration of MP&TS implications within the FMP process. The Study was divided into three tasks:

<u>Tasks</u>	<u>Purpose</u>
1	Analyze and describe the Navy's current procedures for MP&TS planning and review as they apply to the FMP.
2	To the extent necessary, develop procedures, determine responsibilities, examine alternatives, and make necessary recommendations to fully integrate consideration of MP&TS implications into the FMP process.
3	Incorporate the results of Tasks 1 and 2 into a final report that provides for new or modified procedures to more rigidly enforce the MP&TS analysis and review process in the FMP, including development of an implementation plan and concomitant marginal resource requirements.

C. FINDINGS

As a result of the analyses, the MODMAN Study found that:

- MP&TS requirements are addressed too late in the FMP process for effective planning to take place.
- MP&TS problems are inextricably connected with overall ILS deficiencies and with the intrinsic complexity of the FMP operation.

- Existing instructions provide no coordinated guidance and do not delineate responsibility for optimum support of MP&TS requirements.
  - Instructions do not provide firm control and management of ILS within the FMP.
  - MP&TS analysis requirements provide no incentive and lack active enforcement.
- Determination of precise responsibilities is difficult.
  - Proposed improvements originate from many sources.
  - FMP funding originates from many sources (including O&MN, OPN, and WPN).
  - SLMs do not have control over new systems that are to be installed, as do SHAPMs.
- Most proposed improvements are originated for existing ships.
- A small percentage of proposed improvement programs document MP&TS implications.
- PATAO is neither funded nor staffed to analyze all SHIPALTs.
- MP&TS analyses do not consider:
  - Individual hull differences,
  - Removals,
  - Aggregate impact of conjunctive alterations.
- Funding is insufficient to perform C&F studies on all proposed improvements.
- Training equipment may not receive the changes that are made in the Fleet early enough to provide necessary training capabilities.
- There are no definitive methods of ensuring that Emergency/Quick Reaction Capability/Rapid Development Capability items receive an MP&TS analysis.

- Only two of the existing MISSs have potential for aiding in the identification of MP&TS implications:
  - SAMIS
  - TRAPS.

D. RECOMMENDATIONS

The following is a summary of the MODMAN Study recommendations:

- C&F Study Funding
  - Require all PMIs to have a C&F Study.
  - Require all PTIs to have a C&F Study equivalent or be certified that none is required.
  - Shift primary budgeting source for C&F Studies from NAVSEA-04K to responsible PM, PDA, or Acquisition Manager.
  - Retain central management control of C&F Study process within NAVSEA-04K.
- PMI/PTI
  - Develop specific format for all PTI submittals similar to PMI format.
  - PMI/PTI forms should provide guidelines for originator in making his initial assessment of MP&TS implications.
  - Designate a single organization (NAVSEA-04K) to which all PTIs must be sent by the SLMs.
  - Assign specific responsibilities to each involved organization.
- MIP/TIP
  - Develop a new SAMIS subsystem for tracking PMI/PTIs from origination to approved SHIPALTs.

- PMI/PTIs should be assigned numbers and entered into the new SAMIS subsystem, including scheduled dates for primary approval steps.
- Send reports to all organizations supporting PMI/PTI approval.
- Assign a preliminary priority to PMI/PTIs in order to provide a preliminary AMT report.
- MP&TS Constraints/Actions
  - Distribute periodic PMI/PTI reports to all involved organizations.
  - Emphasize requirement for PMs, PDAs, Acquisition Managers, and OPNAV sponsors to perform, or have performed, MP&TS analyses.
  - Require certification to be provided to substantiate that MP&TS analysis has been performed.
- Organizations
  - OP-01/OP-099 should be given overall authority in assuring that MP&TS implications of proposed improvements have been properly acknowledged and addressed.
  - SAIP-FMP charter be revised to reflect DCNO Manpower (OP-01) and the DMSO Training (OP-099) as permanent vice associate members.
  - NAVMAT-0412, NAVMAT-042, and NAVSEA-0461, which presently act in a "reactive" mode towards ILS requirements in general and MP&TS requirements in particular, should assume more active roles in monitoring and controlling their parent organization activities.
- Emergent, QRC, and RDC Items
  - Should follow same approval circuit as other items (accelerated, if necessary).
  - Should receive SAIP-FMP approval prior to entering approval circuit.
- Instructions
  - Revise existing instructions to reflect those MODMAN recommendations that are implemented.

- MODMAN working group charter should be extended beyond the study to provide central management of necessary documentation changes.

## SECTION I

### INTRODUCTION

#### A. BACKGROUND

In recent years there has been a striking increase in the costs associated with military manpower. High levels of interest in this area have generated the requirement to forecast and control operating and support (O&S) costs beginning early in the Weapon Systems Acquisition Process (WSAP). As a result of this concern, the Military manpower versus Hardware Procurement Study (HARDMAN) was established as part of the Chief of Naval Operations (CNO) Studies and Analysis Program (CSTAP 76/T). The HARDMAN Study provided a review and analysis of the Navy's current Manpower, Personnel and Training Support (MP&TS) requirements reporting and review structure as it applies to the WSAP.

The HARDMAN Study developed procedures that:

- Fully address manpower, personnel and training support requirements prior to the making of procurement decisions.
- Establish the DCNO (Manpower) and the DMSO (Training) as participants in the early stages of the WSAP.
- Identify that portion of a weapon system's Life Cycle Cost (LCC) which is attributable to MP&TS requirements.
- Assess, prior to procurement decision, a weapon system's impact on manpower, personnel and training resources throughout its operating lifetime.

During the course of the HARDMAN Study, it was pointed out that, in addition to the WSAP, the Navy's Fleet Modernization

Program (FMP) also had MP&TS implications which require investigation. The FMP provides for the accomplishment of ship alterations and improvements based on a five-year time frame composed of the execution year, budget year, and three planning outyears<sup>1/</sup>. This year-by-year approach is intended to provide sufficient lead time for material procurement, budgeting, ship/shipyard scheduling and the design of installation plans to accomplish the planned improvement.

The FMP is supported by an automated data processing system, known as the Ship Alteration Management Information System (SAMIS), which provides timely information to plan, manage, and execute the FMP. The SAMIS data bank provides installation cost, installation mandays, material information, ship availability, and related details. Such information is continually modified and updated as the FMP process evolves. The FMP and its SAMIS data base, however, do not process data relating to manpower requirements or changes in skills required for operation and maintenance of systems installed or removed under the FMP. Also, analyses of the impact of ship alterations on ship manning skill levels and numbers occur too late in the ship overhaul planning cycle to assure adequate on-board skills for the operation and maintenance of the new equipment or systems.

The Study of Manpower Implications of the Fleet Modernization Program (MODMAN) was established (CSTAP 77) to investigate the

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<sup>1/</sup> Some ship alterations are planned as much as eight years in advance.

MP&TS problems associated with the backfitting of new systems/equipment into existing platforms. The objectives of the MODMAN Study were to evaluate the existing MP&TS planning process as applied to the FMP and to develop more effective methods to insure full consideration of MP&TS implications within the FMP process. The Study has resulted in proposed improvements to the FMP process itself as well as recommendations to fully integrate consideration of MP&TS implications into the FMP process.

The MODMAN Study was performed over an eight month period and divided into three tasks:

<u>Task</u>	<u>Purpose</u>
1	Analyze and describe the Navy's current procedures for MP&TS planning and review as they apply to the FMP.
2	To the extent necessary, develop procedures, determine responsibilities, examine alternatives, and make necessary recommendations to fully integrate consideration of MP&TS implications into the FMP process.
3	Incorporate the results of Tasks 1 and 2 into a final report that provides for new or modified procedures to more rigidly enforce the MP&TS analysis and review process in the FMP including development of an implementation plan and concomitant marginal resource requirements.

Tasks 1 and 2 resulted in working papers which were reviewed and approved during the course of the Study by the Advisory Committee. This final report is based on those earlier papers.

B. PURPOSE OF REPORT

The purpose of this report is to document the findings and recommendations of the MODMAN Study. The report presents a detailed analysis of the FMP process and provides recommended modifications to FMP procedures. These modified procedures will serve to identify MP&TS requirements, their magnitude, and related costs. They will also serve to assess the projected availability of MP&TS prior to the programming of alterations for accomplishment within the FMP.

## SECTION II

### ANALYSIS OF THE FMP PROCESS

#### A. THE FMP PROCESS AS DOCUMENTED

##### 1. General

The Fleet Modernization Program is the process by which proposed ship improvements are identified, processed into Ship Alterations (SHIPALTs), and scheduled for accomplishment. The FMP provides a funding base for the design and installation of alterations as well as for alteration planning and support. Based on operational requirements, the FMP is developed and approved by the Chief of Naval Operations (CNO) in conjunction with the Fleet Commanders-in-Chief (FLTCINCs) and the Chief of Naval Material (CHNAVMAT). The FMP is financially managed and executed by the Commander, Naval Sea Systems Command (COMNAVSEASYSCOM), acting as executive agent for CHNAVMAT. The Ship Acquisition and Improvement Panel (SAIP-FMP) of the CNO Executive Board (CEB) is responsible for the review and approval/disapproval of proposed military improvements to the characteristics of Naval ships and manages all phases of FMP planning and programming. NAVMAT (NAVSEA Ship Logistic Manager) is responsible for like action on proposed technical improvements.<sup>2/</sup> The SAIP-FMP also monitors FMP execution, which is the responsibility of OP-436.

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<sup>2/</sup> Military and technical improvements are defined in Appendix B.

A ship improvement may be initiated from virtually any source. The source could be, for example, industry; research and development organizations; fleet, hull, equipment or program sponsors; system commands; or an individual. In the case of a Proposed Military Improvement (PMI), the originator forwards a PMI form to CNO (OP-436) for initial review. After review and acceptance, NAVSEA-04K is required to identify the cognizant Ship Logistic Manager (SLM) and provide him with funds for a Cost and Feasibility (C&F) Study. The C&F Study provides an estimate of installation costs and assesses the impact of the ship installation upon such items as weight, moment, space, power, and accommodations. The C&F Study does not address specific costs, MP&TS, nor complete logistic support. This assessment is correlated with ships configuration changes which will result from alterations already approved for installation.<sup>3/</sup> The results of the C&F Study are staffed through CNO, and upon SAIP-FMP approval, NAVSEA-04K adds the PMI to the Military Improvement Plan (MIP). In the case of a Proposed Technical Improvement (PTI), approval is granted by NAVSEA and it is then added to the Technical Improvement Plan (TIP).

---

<sup>3/</sup> Ship alterations approved for installation are listed in the Amalgamated Military and Technical Improvement Report. See Appendix B for further definition of this report.

The Amalgamated MIP/TIP (AMT) report is generated from the MIP and TIP reports and is a prioritized merger of the MIP and TIP. This merger is to be accomplished at the annual Fleet Modernization (FLTMOD) conference, attended by Fleet, Type Commander (TYCOM) and SYSCOM representatives and OPNAV hull, mission, and equipment sponsors. The conference is chaired by CNO (OP-436). See Figures 1 and 2 for flow charts of PMI/PTI documentation paths.

Using the prioritized list in the AMT (after the FLTMOD Conference has finalized the AMT), the CNO (OP-436) prepares individual hull listings of ship and ordnance alterations to formulate the FMP Report. TYCOMs follow an analogous procedure to arrive at a listing of TYCOM-funded (Title D and F) alterations for each hull.<sup>4/</sup> The items are listed for accomplishment in accordance with the approved ship overhaul schedule. Since there are many more items in the AMT than can be accomplished during any one overhaul period, the alterations are programmed for each scheduled overhaul to display a realistic work package using industrial manpower, overhaul length, material procurement lead time, and budgeted dollars as limiting factors. These programming actions constitute the alteration packages for a ship over a number of industrial availabilities covering a five year period.

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<sup>4/</sup> Appendix B contains definitions of the various ship alteration title categories.

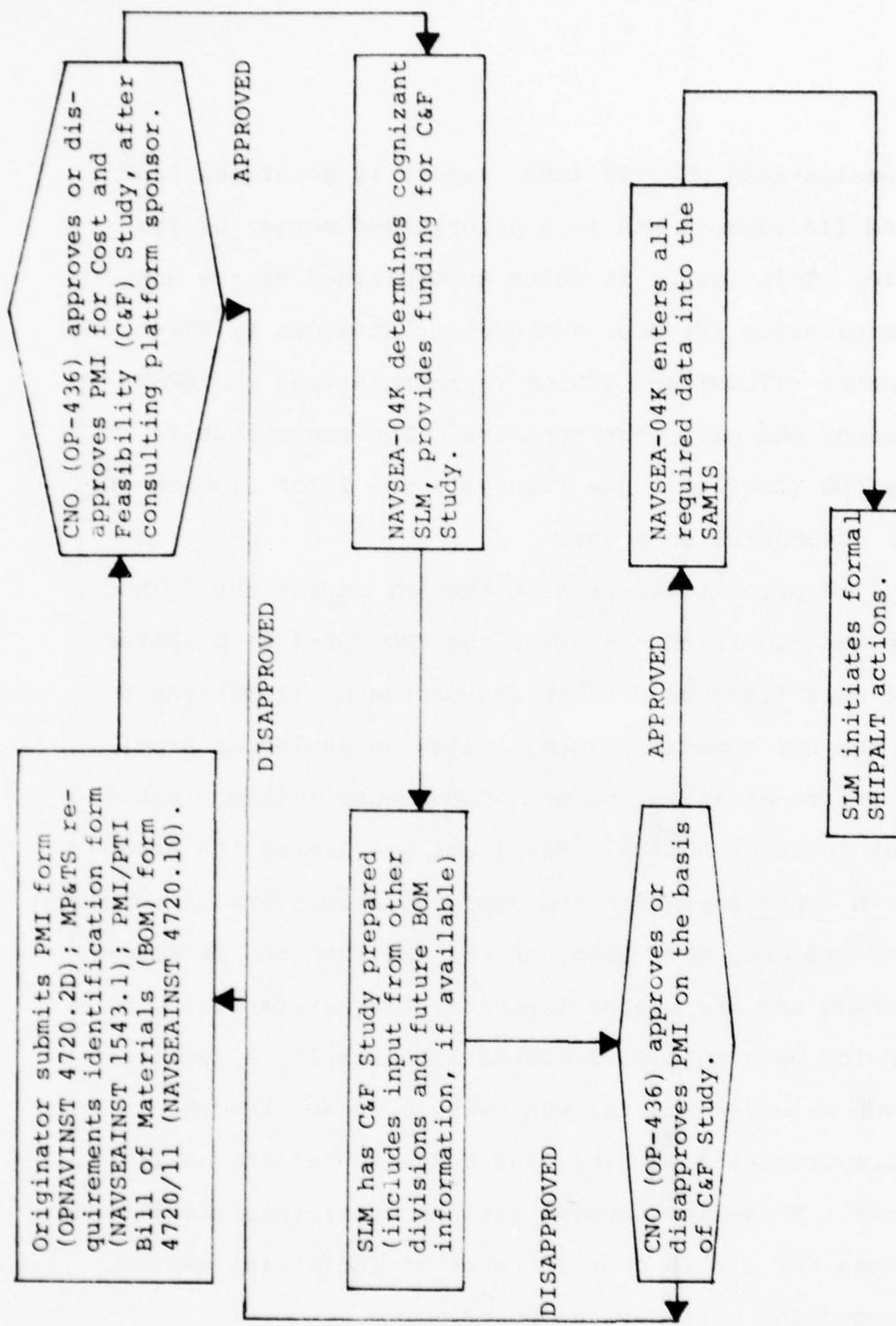


FIGURE 1  
PRESENT PATH OF PROPOSED MILITARY IMPROVEMENT  
AS DOCUMENTED

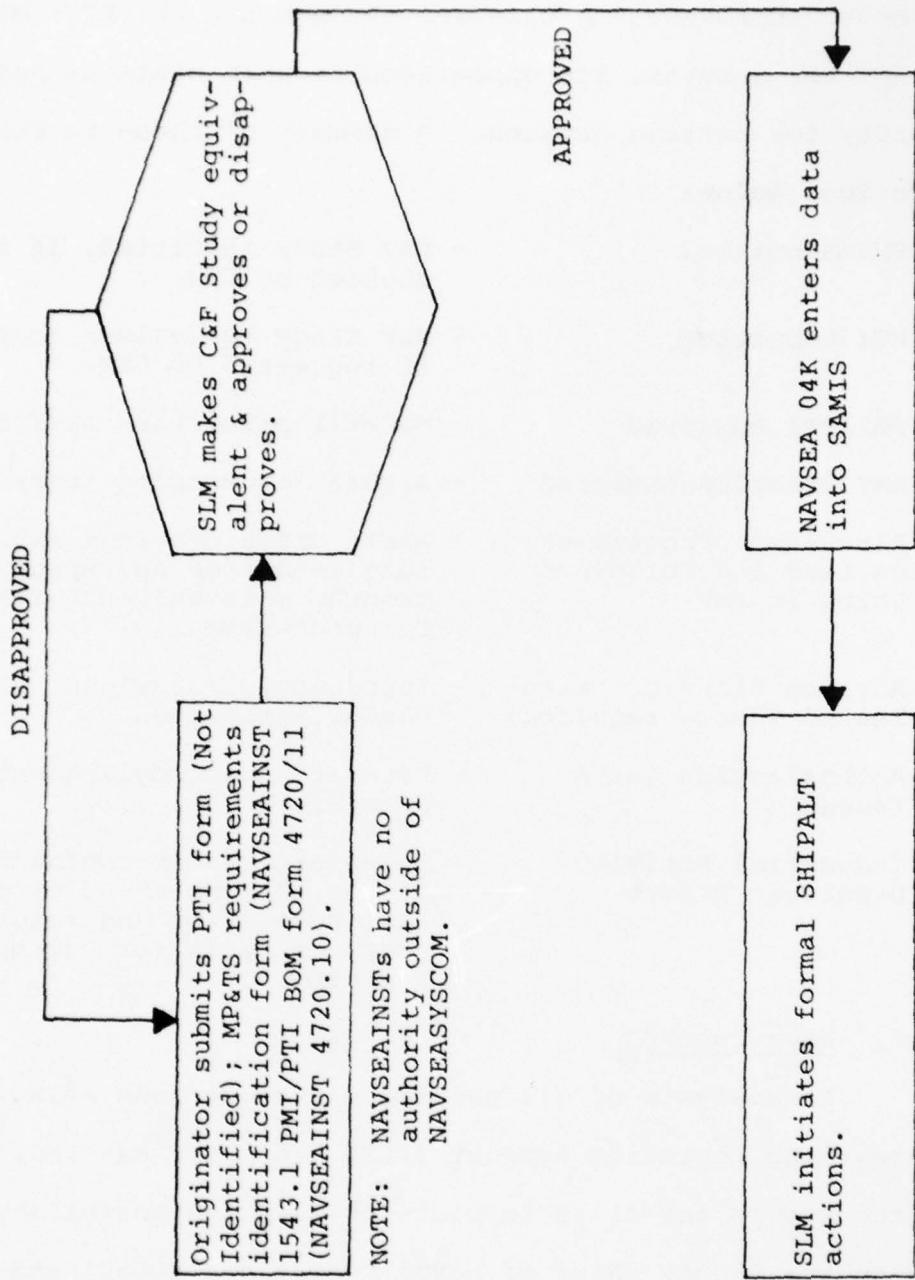


FIGURE 2  
PRESENT PATH OF PROPOSED TECHNICAL IMPROVEMENT  
AS DOCUMENTED

As an improvement progresses through the PMI/PTI--MIP/TIP--AMT-FMP process, its appearance in each stage provides authority for certain actions. A summary of these actions is provided below:

PMI Submitted	- C&F Study initiated, if requested by CNO.
PTI Submitted	- C&F Study equivalent initiated, if requested by SLM.
PMI/PTI Approved	- MIP/TIP priorities assigned.
AMT Priority Assigned	- Alteration scoping tasked.
Alteration Programmed on Lead and Follow-on Ships in FMP	- Basic class drawings authorized; long lead time and special program material authorized for procurement.
Advance Planning Letter Issued (where required)	- Supplemental drawings, ship checks authorized.
Authorization Letter Issued	- Alteration accomplishment authorized.
Industrial Activity Departure Report	- Departure report contains status of completion or partial completion and return costs as basis for further planning.

## 2. Navy Intent

An analysis of all pertinent instructions relating to Integrated Logistics Support (ILS) and MP&TS has indicated that the Navy's intent is to place primary responsibility for MP&TS on the Deputy Chief of Naval Operations (DCNO) and Director Major Staff Office (DMSO) Program Sponsors, on all designated Program Managers, and on the Principal Developing

Activities within NAVMAT. The following list of instructions, with a short explanation of each, is provided to illustrate the basis for the statement of intent.

- o SECNAVINST 4000.29A - CNO is tasked to provide ILS data in Operational Requirement Documents (ORs) or equivalent.
- o OPNAVINST 4100.3A - DCNO and DMSO Program Sponsors, Program Managers (PMs) and Principal Developing Activities (PDAs) are tasked to plan, program, and fund ILS efforts, beginning in the concept formulation stage.
- o OPNAVINST 5300.3A - Chief of Naval Material (CNM) is tasked to identify ILS work necessary from concept stage onwards; ensure that MP&TS tradeoffs are in all Development Proposals (DPS); and conduct logistic support analyses to support MP&TS necessary for new equipment/systems.

In addition, new systems/equipment developed through the WSAP usually have a Program Manager and an OPNAV Program Sponsor, and have their ILS planned, programmed, and budgeted by their respective PMs. There appears to be no justification for a different ILS planning process for systems/equipment developed for the FMP.

The statement of intent is also reinforced by the existing FMP instructions and by the actions of the Navy organizations involved in the FMP. The purpose of the FMP is to install

system/equipment/hardware, or changes to same, on existing platforms. The MP&TS for the generic system/equipment/hardware should be provided by the PM or Sponsor of the change, as is the remaining ILS (with the minor exception of some Design Services Allocation (DSA) and Consolidated Shipboard Allowance List (COSAL) support performed under the auspices of the FMP). The organizations directly involved in the FMP should determine whether previously identified MP&TS requirements are sufficient, should be kept informed as to their timely execution, and should coordinate the installation of the change with the execution of the MP&TS requirements.

### 3. FMP Funding

FMP installation funding (Operations and Maintenance, Navy (O&MN) appropriation) is administered by NAVSEA-04K (with some minor exceptions). The funding originates from the following three sources:

#### (a) Budget Activity 1

Includes Strategic Forces Submarines (SSBNs) and associated tenders and service craft; also separate funding and support related to these vessels.

#### (b) Budget Activity 2

Includes General Purposes Active Forces (amphibious ships, auxiliary ships, cruisers, destroyers, aircraft carriers, submarines and miscellaneous hulls); also separate funding and support related to these vessels.

(c) Budget Activity 8

Education and Training. Includes training related to the operation, maintenance, and installation of equipment during ship alterations of a training carrier and support for training squadrons, certain naval air stations, and the naval aviation schools command.

There are three separate areas in which these funds are expended.

(a) Ship Hulls

- Funding associated with accomplishment of specifically defined alterations on specific hulls programmed for overhaul/availability during a given fiscal year.

(b) Separate Funding

- Funding associated with accomplishment of specific types of alterations on an accelerated basis. Funds are not budgeted for specific hulls but by specific type of alteration. These alterations are accomplished on selected ships based on availabilities and mission requirements during the fiscal year and include such major programs as ordnance and nuclear alterations.

(c) Support

- Funding associated with support aspects of the FMP, specifically, DSA and COSAL. DSA provides for the planning and accomplishment of design engineering and technical documentation associated with ship alterations. COSAL provides the Naval Supply Activity (NSA)/Defense Supply Agency (DSA) repair parts necessary to keep hulls properly outfitted.

(See Table 1 for typical alteration expense funded by FMP dollars.)

Type of Expense	Type of Alteration				
	Title K Alts	Title D Alts	Title F Alts	Nuclear Alts	Ord Alts
SHIPALT Scoping	DSA	DSA	DSA	NUC	--
BACD	DSA	DSA	DSA	NUC	--
Adaptive	INSTLN	--	--	NUC	--
Incidental Installation (INSTLN) Material	INSTLN	--	--	NUC	--
Special Program Material	--	--	--	--	--
Prefabrication	INSTLN	--	--	NUC	--
Installation	INSTLN	--	--	NUC	ORD
Checkout (Along Side Pier)	INSTLN	--	--	NUC	ORD
Ship Salecard Records	DSA	DSA	DSA	NUC	DSA
Initial Repair Parts	COSAL	COSAL	COSAL	NUC	COSAL

ALTERATION EXPENSES FUNDED BY FMP  
(AND THE USE OF THOSE FUNDS)

TABLE 1

In addition, there is a funding source from Budget Activity 7 (O&MN but not FMP dollars) used for cost and feasibility studies.

The FMP has grown considerably in the last few years. The FY73 installation budget was \$282.9 million; the FY79 FMP budget is \$963 million. Of this, \$730 million is for ship hull funding, \$115 million is separate funding, and \$118 million is support funding.

#### 4. Alteration Installation Requirement

The Alteration Installation Requirement (AIR) is a document generated by the originator of the PMI/PTI to aid the SLM in the preparation of the Ship Alteration Proposal (SAP) prior to scoping and developing the approved SHIPALT. This means that the AIR is not usually prepared until after the C&F Study is complete, and the SHIPALT approved and entered in the AMT. The AIR provides all known installation requirements. It is not oriented towards ILS, although it does include several ILS elements (training, Ship Manpower Documents, and manpower changes).

#### 5. Design Services Allocation

The Design Services Allocation (DSA) Program is a major participant in the FMP as it provides for the planning, budgeting, and accomplishment of design engineering development and technical documentation necessary to alteration installation and ships configuration documentation update

following installation. There are four primary functions of the DSA Program.

(a) Alteration Development Support.

Alteration Development Support (ADS) includes those design, engineering, and analysis tasks required in initial SHIPALT development.

(b) Basic Alteration Class Drawings.

Basic Alteration Class Drawings (BACDs) are installation drawings prepared as the first complete set applicable to the installation of a specific ship alteration, for each applicable class. They are usually directly applicable to the lead or representative ship for which they are prepared, and generally applicable to other ships of the class covered by the SHIPALT.

(c) Ships Selected Records.

Ships Selected Records (SSRs) comprise hull level system technical documentation, which is maintained current throughout the life of the ship. These include selected record drawings, selected record data, and allowance lists.

(d) Miscellaneous Documentation Support.

Miscellaneous Documentation Support (MDS) provides support of the Fleet for minor design tasks and documentation requests. Additionally, MDS provides for planning yard technical services required to monitor SSRs for accuracy and completeness and to effect correction as necessary.

The restrictions on the expenditure of the DSA resources are that they cannot be expended for the development of:

- (a) A title "K" SHIPALT unless an alteration number has been assigned and the alteration bears an AMT priority assigned by CNO.
- (b) The BACD for "K" SHIPALTS until the alteration is programmed in the FMP for accomplishment.
- (c) A title "D" or "F" SHIPALT until the cognizant SLM and TYCOM have approved this effort.
- (d) The BACD for "D" or "F" SHIPALTS until the alteration is scheduled for accomplishment by the TYCOM.

**B. REQUIRED MP&TS ACTIONS DURING THE FMP**

As documented, the following specific MP&TS actions are required during the FMP:

1. The completed PMI form requires two lines to be filled in regarding impact of the proposed alteration on manpower and training. The first requires a check to be placed in the blank for manpower additions, deletions, or no change. The second requires a check to be placed in the proper blank if there are training requirements onsite or ashore.
2. The "Introducer," or "Program Developer" when acting for the "Introducer," must review and report semi-annually all items under his cognizance that may require MP&TS. MP&TS Requirements Identification Form NAVSEA 1543/1 is to be used for this purpose.

NOTE: Since many Program Developers are not within NAVSEA, this requirement, levied by NAVSEAINST 1543/1, is not applicable to them.

These are the only instances of MP&TS actions that are specifically required. A review of the applicable instructions that are summarized in Appendix C of this report indicates that a requirement for over-all Integrated Logistics Support action has been documented all the way from SECNAV to OPNAV to NAVMAT.

C. THE FMP PROCESS AS CURRENTLY PRACTICED

1. Origins of PMI/PTIs

Approximately 70% of all PMIs originate from the Research, Development, Test and Evaluation (RDT&E) community. Some of these improvements are the result of a successful project on a new system or equipment for new ships subsequently proposed for backfitting into existing platforms. Others are designed expressly for incorporation as major changes or additions to existing platforms. There appears to be little control over the timing of the submission of a formal PMI by the various RDT&E communities. Several instructions (OPNAVINST 1500.8H, OPNAVINST 5000.42A, OPNAVINST 5300.3A) refer to the necessity for submitting PMIs early in the development process, but they do not precisely spell out the point in time that the PMI must be submitted nor the level of detail to which information must be developed prior to submission. PMIs have been submitted after all R&D work has been completed and equipment procurement authorized. However, recent emphasis on the matching of Other Procurement, Navy (OPN) funding with

the O&MN budget should act to eliminate this, since it will provide early visibility of proposed alterations.

PMIs that do not originate from the RDT&E community come from industry or equipment sponsors via systems or program/project sponsors. Others are proposed by individuals, Fleet and Type Commands, and miscellaneous sources. The description of RDT&E originated PMIs is applicable to these PMIs as well. In fact, there is even less control over these diverse PMI sources than there is over the RDT&E PMI sources. Further, no instructions have been identified outside the RDT&E area which address the development stages of a proposed improvement prior to PMI submission.

PTIs do not generally originate in the RDT&E community. Most PTIs are the result of engineering experience, Inspection and Survey (INSURV) investigations or casualty reports; they are usually originated by Fleet or Type Commands. When a technical improvement results in a PTI, it is sent to the cognizant NAVSEA SLM. PTIs do not usually have MP&TS implications. However, since they are staffed through the SLMs for approval/disapproval action, they receive an immediate scrutiny for major impact of any type.

## 2. Ships Maintenance and Modernization Division (OP-43)

The working group of the SAIP-FMP (OP-436) has been designated the central point of contact for all matters pertaining to the administration and implementation of the FMP

(OPNAVINST 4720.2D). This organization is responsible for PMI approval/disapproval, the assignment of preliminary AMT priorities, and the programming of the FMP from the approved AMT.

When OP-436 receives a PMI, they investigate its desirability and impact.<sup>5/</sup> After this initial determination, the PMI is sent to the appropriate OPNAV platform sponsor, such as OP-02 (Submarine Warfare), OP-03 (Surface Warfare), or OP-05 (Air Warfare). It should be noted, however, that military improvement originators often review their proposed improvements with the appropriate platform sponsor prior to submitting the PMI to OP-436. This unofficial procedure increases the likelihood of OP-436 approval since the platform sponsors are also involved in the formal approval actions initiated by OP-436, and therefore will have all the information necessary to make a decision. Once approved by OP-436, the PMI is forwarded to NAVSEA-04K for assignment to the cognizant SLM.

The previous paragraphs have described the normal method of processing a PMI. Several other methods are also used, although infrequently. First, there is the CNO-directed ship alteration, which occurs when a system/equipment is judged sufficiently important by the CNO to be quickly installed aboard certain platforms. An example of this is the Satellite

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<sup>5/</sup>

OP-436 receives approximately 70 to 90 PMIs each year.

Communication System. Second, there are those PMIs considered to be Quick Reaction Capability (QRC), Rapid Development Capability (RDC), or Emergent items. These are usually proposed by an OPNAV platform sponsor for quick installation. The third method occurs when a PMI is initiated via telephone to OP-436 from an originating community. This method is used when an originator wants to get his proposed improvement officially listed on the AMT but does not have sufficient information to submit a PMI.

In the first case, OP-436 lists the item on the AMT, may or may not immediately reprogram the FMP, and initiates NAVSEA SHIPALT action. In the second case, OP-436 will try to process the PMI in the normal manner, but in a compressed time frame, eliminating steps where possible. The item is listed in the AMT and the FMP is reprogrammed. In the third case, the item is listed in the AMT under a dummy number. The purpose of the dummy number is threefold. It serves notice to all AMT recipients that a PMI exists with the title shown; it provides a preliminary assessment of its priority; and it allows both OPN and O&MN funding to be provided for.

It should be noted that the MIP and TIP reports are no longer extensively used. Instead, PMIs and PTIs are input directly to the AMT. There appears to be good reasons for this early AMT entry. First, the time consumed by going through three iterations of reports to arrive at a programmed FMP is

prohibitive and expensive. Second, there is now only one FLTMOD conference per year rather than the two originally scheduled. Third, OP-436 has the responsibility for determining the FMP priority from the approved AMT. They, therefore, have historical knowledge of how the AMT priorities are determined and can intelligently assign an AMT priority to a new line. The early assignment of the AMT gives the FLTMOD conference a timesaving document in that it is quicker and easier to rearrange existing priorities than it is to assign them from scratch. Fourth, before hardware can be programmed in the OPN budget, it must be the subject of a PMI, listed on the AMT, and be in the O&MN budget for installation dollars. The initial SAMIS entry, therefore, is made to the AMT via the dummy number previously described. This dummy number becomes a real number after the FLTMOD conference has determined its true priority.

### 3. Fleet Modernization Support Group (NAVSEA-04K)

When NAVSEA-04K receives a PMI from OP-436, they determine the cognizant SLM, provide the necessary funds for the C&F study, and forward the PMI to the SLM. Historically, NAVSEA-04K does not have sufficient funds for the performance of all required C&F studies in a given year. In these cases, either the SLM must come up with the funds or OP-436 must be informed and provide resolution.

NAVSEA-04K maintains the SAMIS and Ship Equipment Configuration Accounting System (SECAS) computer systems. All inputs to these systems are either made or controlled by this organization. Thus there is one central point of control. OP-436 entry to the AMT is channeled through NAVSEA-04K, who is also the financial manager of the FMP.

4. Ship Logistic Managers (NAVSEA-924, -934, -941, -942)

The SLMs are responsible for introducing all proposed changes into the Fleet. Officially, the SLM is made aware of a PMI only when it is sent to him by NAVSEA-04K through the normal PMI route. Actually, the SLM is often consulted by the originator during the developmental stages of the proposed change, particularly those of significant magnitude.

After NAVSEA-04K forwards a PMI to the SLM, the SLM initiates the C&F study action. This involves, among other things, a determination of known material requirements, impact on ship systems and an identification, to cost class F ( $\pm 40\%$ ), of costs for incidental material, installation, and DSA. Further information may be required to be provided by the originator or various other activities. Upon completion of the C&F study, the results are sent, via NAVSEA-04K, to OP-436 for final approval of the PMI. Because of the extensive review that most PMIs receive prior to the C&F study, few are disapproved at this point in the cycle. Upon OP-436

approval, the approved PMI is returned to the SLM, again via NAVSEA-04K, who commences formal SHIPALT action.

5. Personnel and Training Analysis Office (NAVSEA-047C)

NAVSEA-047C has been designated as the organization to be utilized as the normal and usual method for the development of personnel and training inputs to Navy Training Plans (NTPs), ILS Plans, Ship Manpower Documents (SMDs), the FMP, and related program/requirement documents (NAVMATINSTs 5311.2 and 5311.3). The Personnel and Training Analysis Office (PATAO) is a modified industrially funded organization of professional analysts who are capable of determining MP&TS requirements for systems and equipment.

Since PATAO is industrially funded, organizations wishing to utilize their services must budget for this work a year ahead of time. This means that reprogramming for emergent items is difficult, if not impossible. Further, although copies of SHIPALTs should be sent to PATAO, the office has no means of ensuring receipt of all SHIPALTs. In addition, the formal distribution of SHIPALTs occurs too late in the life cycle of the change for MP&TS implications to be optimally addressed.

6. General

If one substitutes the SYSCOM (SLM) for OP-436 as the approval agent, the approval process for PTIs becomes

essentially the same as for PMIs.<sup>6/</sup> Since PTIs are concerned primarily with safety items and minor improvements to existing systems/equipments, very few impact on MP&TS.

MP&TS implications of PMI/PTIs are presently considered in the following three cases:

1. When the PMI is of sufficient magnitude to have required a Program Manager/Principal Developing Activity or an ILS Plan, and/or receives widespread Navy acceptance/visibility.
2. When the PMI/PTI has extremely obvious MP&TS implications.
3. When the formal SHIPALT actions are initiated by the SLM.

The third case is the first time during the eight to 20 month development cycle of a proposed improvement that it is likely to have an analysis of its MP&TS implications, regardless of magnitude or potential Fleet impact.

D. KEY POINTS IN THE FMP PROCESS

The investigation of the process of handling proposed ship improvements, both as documented and actually accomplished, indicates that there are three key points or times at which MP&TS implications either are presently addressed or could/should be considered:

- Prior to and/or at the time of origination of the PMI/PTI

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<sup>6/</sup> A separate instruction concerning PTIs is presently being developed by NAVSEA.

- During the C&F study on the proposed improvement
- At the time of the SLM initiation of formal SHIPALT action for the approved improvement (coincides with the SHIPALT being programmed in the AMT).

#### 1. Origination of Proposed Improvement

The first key point, both in importance and timeliness, occurs prior to or at the origination of the PMI/PTI. At present, there is no coordination between existing instructions concerning the development of MP&TS requirements and no active enforcement of these instructions. There is a lack of conformance to required procedures and a general lack of awareness of the importance of considering MP&TS implications during the development cycle. Pertinent instructions do not require that information necessary for MP&TS analysis be provided at given points during the development cycle and no direct input from experts in MP&TS is required prior to submittal of a PMI/PTI to CNO/SLM for approval for a C&F study or equivalent. In addition, there are no strict instructions at the CNO/SLM level pertaining to acceptance/nonacceptance of proposed improvements when they have incomplete documentation.

#### 2. Cost and Feasibility Study

The SLM-conducted C&F study is another point in the improvement life cycle to consider MP&TS. At the present time, however, MP&TS requirements are only taken into account on an intermittent basis, depending upon the magnitude of the proposed improvement, the time frame and the SLM

representative's individual judgment. There are four points to consider here:

- (a) There is no instruction insuring that MP&TS implications are fully considered for all improvements at this stage nor is there a check on whether required documentation is available.
- (b) The SAMIS does not provide any information regarding improvements at this stage because either no entry is made until after the C&F study is approved or only a dummy number entry is made.
- (c) C&F studies do not presently include an examination of ILS requirements (which includes MP&TS).
- (d) Not all proposed improvements receive a C&F study.

### 3. Initiation of Formal SHIPALT Action

The initiation of formal SHIPALT action by the SLM is the key point that is now being utilized as the center around which MP&TS requirements are being taken into consideration. The process is still hit-or-miss operation, however, because of the following reasons:

- (a) Anywhere from eight to 20 months may have elapsed from origination of the improvement, and too much of the money for the alteration (up to 70% of the life cycle costs) may have been committed to allow MP&TS requirements to be seriously considered at this point.
- (b) SAMIS provides no MP&TS information in its reports and is therefore of little use in notifying report recipients of MP&TS impact.
- (c) Copies of all SHIPALTS are supposedly sent to PATAO, but not only is it too late in most cases for their analysis to be fully effective, but PATAO is not funded or manned to examine all these SHIPALTS.

Because of these reasons, MP&TS is often back-ended into the SHIPALT; in other words, by the time MP&TS is considered, too much time and money has been invested to do more than direct that MP&TS be provided. MP&TS resources are addressed in a strictly reactive mode.

### SECTION III

#### FMP PROCESS MODIFICATIONS CURRENTLY UNDERWAY

There are several efforts currently underway within the Navy's FMP organization that are expected to have a positive impact on the early identification of MP&TS requirements. This section briefly describes these efforts and outlines the anticipated resulting improvements.

##### A. NAVSEA-04 REORGANIZATION

A functional realignment within the NAVSEA-04 Directorate has established NAVSEA-04K, the Fleet Modernization Support Group. The formation of this new group, which consists of the old NAVSEA-042 and selected elements of NAVSEA-041, -044, -048, and -049, has consolidated FMP support functions and is expected to result in better coordination and control of the overall NAVSEA FMP effort.

##### B. MATCHING OF MATERIAL AND INSTALLATION BUDGETS

CNO Message 271340Z dated July 1976 stated that in order for a system/equipment to be budgeted or procured for back-fitting into existing platforms, installation dollars should be budgeted for the item in the O&MN funding appropriation and the item must be programmed for installation in the FMP. Since that time, an effort has been underway to manually accomplish this task for the FMP. OPNAV-436 and NAVSEA-04K have been the developers of this effort and have initiated a process to automate this function within a module of the SAMIS known

as the SAMIS Material Requirements Forecast (SMRF) Module.

One of the main problems associated with the identification of MP&TS implications within the FMP is the lack of early visibility of a proposed change. An automated subsystem such as SMRF, which is designed to forecast and track material requirements for the FMP by matching the Other Procurement, Navy/Weapons Procurement, Navy (OPN/WPN) dollars with O&MN dollars, has the inherent capability of providing the early visibility needed to support all ILS requirements for the material procured. This module could provide the information necessary for the planning, programming, and budgeting of ILS requirements for each system/equipment, or modification thereto, procured as well as for the item itself. In addition, out-year planning information for update of the Program Objective Memorandum (POM) would be available and, with increased reliability of out-year planning, MP&TS (as well as all ILS) could be more effectively programmed.

C. REDUCTION OF SHIPALT TYPES

The Committee on Improved Configuration Control is currently investigating the concept of reducing the number of ship alteration types to two, one each for hull and equipment, each with specific control and accountability. If this reduction encompasses Engineering Change Proposals (ECPs) and field changes as well as SHIPALTs and Ordnance Alterations

(ORDALTs), it will have the potential of significantly improving configuration control of active ships and control of the initiation of changes, thereby providing a means by which standardized control of MP&TS implications can be effected.

D. CLASS IMPROVEMENT PLAN

NAVSEA, OPNAV-03, and OPNAV-43 have begun discussions directed at establishment of the Class Improvement Plan (CIP) for all SHIPALTs for the FF 1052 class overhaul program. This is to provide a basis for all future surface combatant CIPs. The CIP is to make a feasibility study of the entire package of SHIPALTs for the class. This study would then give recognition to such things as packaged and conjunctive SHIPALTs and removals. While this will not have a direct effect on the identification of MP&TS implications within the FMP, it should provide a more realistic baseline (including approved changes to the baseline) from which to estimate required MP&TS and, if accomplished in a timely manner, will give manpower planners time to review SMDs and NTPs accordingly.

## SECTION IV

### FINDINGS

Following are the principal findings of this study.

1. The Navy's intent is to place primary responsibility for MP&TS on the DCNO and DMSO program sponsors, on all designated Program Managers, and on the Principal Developing Activities within NAVMAT.

2. MP&TS requirements, if at all considered, are addressed too late in the FMP process for effective planning to take place.

3. The problems related to the MP&TS implications of alterations accomplished during the FMP are inextricably connected with the problems of providing ILS for ship alterations. Feedback from the Fleet indicates overall ILS problems rather than just MP&TS problems.<sup>1/</sup>

4. The FMP is a highly complex process involving many Navy organizations. Each of these organizations has its own functions and responsibilities, some which conflict with, rather than complement, each other. Within each organization, official

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<sup>1/</sup>The Study Group has reviewed several messages from Fleet Commanders reporting this type of problem. For example, a replacement pump, physically and functionally the same as the one it replaced but different in its operating principal, lacked any technical documentation when it was installed; there was, therefore, no way for maintenance personnel to be trained in its repair. When a new 75 ton air conditioning plant was installed at a Naval school for operator training, the lack of a special oil for the final compressor stage prevented start-up and subsequently delayed training for a long enough period of time to prevent trained operators from reporting to the ship prior to its return to sea after overhaul.

instructions have been promulgated to direct that organization's business. Unfortunately, most of these instructions are limited in scope, and those that address the entire FMP do not contain the specific direction necessary to provide the needed firm control and management of the FMP. This is particularly true with respect to ILS and MP&TS. (A new instruction, NAVSEAINST 5311.1, was issued 14 July 1977 that partially alleviates this problem. See Appendix C.) The MP&TS related problems of the FMP do not result from any one cause but result from the very nature of the FMP and how it operates. The Engineering Change Proposal (ECP) process of NAVAIR, as described in Appendix G, is very tightly controlled. Proposed alterations receive thorough technical and logistic reviews. Although the present structure of the FMP precludes direct application of NAVAIR procedures, current efforts and developments within NAVSEA are tending to drive the FMP in the direction of more highly controlled alterations, as already attained by NAVAIR.

5. Existing instructions provide no coordinated guidance and do not delineate responsibility for optimum support of MP&TS requirements.

6. There appears to be no motivation for participants in the FMP to ensure that proposed improvements have an early analysis for MP&TS implications, nor is there active enforcement of existing FMP process instructions.

7. Items developed for installation on existing platforms

originate from many sources. This makes it difficult to capture information about the development, or often even of its existence or intent, at an early enough time to determine its related implications.

8. Funding for the FMP is generally O&MN. This funding base is for installation of the change, incidental material, and related costs such as DSA and Planning and Engineering for Repair and Alterations (PERA) support funds. Funds for purchase of the generic system/equipment to be installed may be OPN, WPN, or other, and the quantity/quality of ILS provided with the item may vary greatly. This makes the FMP more difficult to manage.

9. The NAVSEA SLMs, who are responsible for the installation of an alteration through the FMP, do not control the system/equipment being installed of the ship upon which it is to be installed. The Ship Acquisition Program Manager (SHAPM) for new construction ships, on the other hand, controls all aspects of his program from R&D through installation/delivery, including all budgeting and funding.

10. The majority of proposed improvements are originated for existing ships and are not the result of R&D efforts directed toward new ship construction only.

11. A very small percentage of items entering the FMP have MP&TS implications recognized and documented. Of these, the SHIPALTs resulting from PMIs, usually "K" ALTs, are large,

highly visible programs that have new or modified NTPs. The SHIPALTs resulting from PTIs, usually "D" or "F" ALTs, are not so large and do not get the visibility of "K" ALTs. Most of the MP&TS implications of these alterations are training implications only and vary from simple on-job training efforts to slight modifications of training equipment.

NOTE: There are problems associated with the timing of SHIPALTs as applied to training equipment. Training equipment often does not receive the changes that are made in the Fleet early enough to provide the necessary training capabilities. Further, it is not always clear which SHIPALTs are applicable to training equipment.

12. NAVSEA-047C (PATAO), which is tasked to provide technical support in the determination of MP&TS requirements, is neither funded nor staffed to do an analysis of all SHIPALTs.

13. Even when an MP&TS analysis is made on a proposed improvement, it is made on an equipment/system basis for a class of ships. This does not usually take into account individual hull differences, removals, conjunctive SHIPALTs, or the development of coordinated manpower requirements caused by the aggregate of a number of other proposed improvements.

14. A separate sum of funds is set aside for C&F studies for each fiscal year. These funds are usually insufficient to do a C&F study on all the proposed alterations that require them, and have run out less than two quarters after the start of the fiscal year.

15. Emergent, Quick Reaction Capability, and Rapid Development Capability items enter the FMP process rapidly and there

are no definitive methods of ensuring they receive an MP&TS analysis.

16. Appendix D describes several management information systems that relate to MP&TS or the FMP. Of these systems, further analysis has indicated that two of them could potentially be of use in the early identification and assessment of MP&TS implications during the FMP. A subsystem could be added to the SAMIS which would track PMI/PTIs from origination through SHIPALT installation. This would provide a positive audit trail of PMI/PTI progress and indicate whether or not constraints have been complied with. (See Sections V.E. and V.F. of this report for recommendations related to this area.) The Training Requirements and Planning Subsystems (TRAPS) of the Naval Training Information System (NAVTIS) could be modified to perform feasibility studies on the training requirements of outyears (as it now does for the first planning year) provided that outyear training requirements were estimated on a more realistic basis.

17. The impact that the MODMAN Study recommendations will have on the various organizations has been determined. Table 2 presents the marginal resource requirements that have been estimated, by the organizations, based on the recommendations. The additional billets required by OP-01/OP-099 have already been programmed for the HARDMAN Project Office, commencing in FY-80. The resources required by NAVSEA organizations are for the performance of C&F studies and MP&TS analyses.

TABLE 2

## VERIFIED MARGINAL RESOURCE REQUIREMENTS

COMMAND	ADDITIONAL BILLETS						CONTRACT (\$000)	
	MILITARY				CIVILIAN			
	QTY	RANK	DESIGNATOR	NOBC	QTY	GS LEVEL	SPECIALTY	
OP-01/99	1	LCDR	1110		1	5	ADMIN	
	1	LCDR	1110	3215				
	1	CDR	1110					
OP-03	1	LCDR	1110					
OP-05	1	LCDR	1300					
	1	CDR	1300					
OP-940	1	LCDR	1100					
SEA-04K					1	12		
SEA-047					4	12	MP&TS	214
					1	13	TPAINING	
SEA-06					2	12	CONFIG MGT	220
					1	12	ILS	
					1	12	FINANCIAL	
					3	12	MP&TS	
SEA-924					1	11	FINANCIAL	270
					1	11	ILS	
					2	12	ENGINEER	
SEA-934					2	12	MP&TS	506
SEA-941					8	13	MP&TS	2,025
SEA-942					2	12	MP&TS	495
NAVELEX	1				11	12	TRAINING	332
TOTAL	8				41			4,062

	MILITARY BILLETS	CIVILIAN BILLETS	O&MN FUNDS (\$000)
MARGINAL RESOURCE REQUIREMENTS	8	41	4,062
RESOURCES ALREADY PROGRAMMED	3	1	
NET INCREASE	5	40	4,062

\*Contract \$ does not include cost of Billets.

## SECTION V

### RECOMMENDATIONS

#### A. GENERAL

Recommendations for the correction of MP&TS problems within the FMP must consider the following points.

1. The impact of recommendations on overall ILS within the FMP must be considered so as to prevent additional burdens on the ILS elements other than MP&TS.
2. Funding problems must be solved by positive identification of prime responsibilities for the funding of each ILS element and each SHIPALT C&F study.
3. Any recommendation that provides for additional tasking within FMP organizations for the sole purpose of advancing the early identification of MP&TS implications, without reducing or eliminating the existing problems which cause the current lack of identification, would be onerous, impractical, expensive, and probably unenforceable.
4. Recommendations must complement those efforts currently underway as described in Section III of this report and reflect, where applicable, the lessons to be learned from NAVAIR ECP processing.

Based on these guidelines, paragraphs C through I of this section describe the specific areas requiring attention and provide recommendations for corrective action.

B. C&F STUDY FUNDING

The FMP is chartered to install alterations aboard existing platforms and to provide certain services associated with the installations. As a result, FMP funds (O&MN) are not legally expendable until a SHIPALT is approved by the SAIP-FMP (for PMIs) or the SLM (for PTIs). For this reason, funds for C&F studies, which occur prior to SHIPALT approval, are not FMP funds (although they are O&MN), and are administrated separately by NAVSEA-04K. The source of these funds is Budget Activity 7 (BA-7), an activity from which many Navy organizations obtain funds. C&F study funding has always suffered from this competition, and the result is a funding base of only 30 to 40% of the amount actually required to do C&F studies on all proposed improvements requiring them.

Based on these factors, the Study Group recommends that the following actions be implemented:

1. Each PMI should be required to have a C&F study in order to receive SAIP-FMP approval for SHIPALT initiation.
2. Each PTI, which in the judgment of the cognizant SLM requires a C&F study, should receive same; and a SHIPALT should not be initiated without it. A PTI not requiring a C&F study would require certification to that effect.
3. Primary budgeting source for C&F studies should be moved from NAVSEA-04K to the appropriate budget activities of the PMs, PDAs, and Acquisition Managers who originate proposed

improvements requiring C&F studies. Funds should be provided either to NAVSEA-04K or directly to the activity performing the C&F study. NAVSEA-04K would provide estimates of C&F study costs and manage the execution of the study process.

Implementation of these recommendations would have the following effect:

- Require that C&F studies be performed, and that funds are programmed and budgeted to perform them.
- Place budgeting responsibility for C&F study accomplishment with the respective PM, PDA, or Acquisition Manager, responsible for the development of the hardware requiring installation.
- Maintain central management control of the C&F study process in NAVSEA-04K.
- Provide earlier documentation of proposed improvements which, through the PMI/PTI module of SAMIS as recommended in Section E, will provide planners, programmers and budgeters with advanced information for use in the POM and for predicting future material requirements.

NOTE: Proposed ship alterations submitted by NAVAIR usually require only an installation cost estimate when received by NAVSEA. These alterations should, therefore, be exempted from the requirement of recommendation 3. NAVAIR alterations are typically essential and integral to the employment of major new airplanes or weapon systems. Prior to submittal to OP-436, the military requirement for an improvement has already

been verified and its technical feasibility reviewed. Submittal to OP-436 is for procedural purposes only. The only C&F action remaining after NAVAIR submits the proposed alteration is the determination of the cost of installing the system. If a feasibility study is also required, this would be funded by NAVAIR in accordance with the recommendation.

C. PROPOSED TECHNICAL IMPROVEMENTS

As indicated in Section 16 of Appendix C, NAVSEA-04K is currently developing a PTI instruction. It is recommended that the following concepts be included in the new instruction.

1. There should be a specific format for all PTI submittals. This format should be approximately the same as the one used for PMIs; indeed, a dual purpose form should probably be developed for both PMIs and PTIs. In addition, PMI/PTI forms should provide guidelines for the originator in making his initial assessment of MP&TS implications. Figure 3 presents suggested guidelines for this purpose.

2. A single organization should be designated to which all PTIs must be sent. PTIs are presently sent to each SLM in letter format. The SLMs do not record receipt of these PTIs, but merely act on them on an individual basis. Only when they have gone through the C&F study (or equivalent) process and been approved by the SLM as a SHIPALT does the formal record keeping process begin. Other Navy organizations which may have an interest in knowing about or commenting on

MANPOWER AND TRAINING EFFECTS (MARK APPROPRIATE DATA)

	<u>YES</u>	<u>NO</u>
a. Are additional billets in excess of those in the SMD required for proper maintenance and operation?	—	—
b. Will the number of billets be increased?	—	—
c. Will OJT provide the required training?	—	—
d. Will a one-time onboard indoctrination program provide the required training?	—	—
e. Is formal classroom training required?	—	—
f. Is formal "hands-on" operator, maintenance, or team equipment training required?	—	—
g. Are training resources (equipment, instructors, MILCON, etc.) required?	—	—
h. What NEC is required for operation and/or maintenance?	_____	
i. If new NEC is required, what is closest related NEC?	_____	

Figure 3

a PTI do now know of its existence until it becomes a SHIPALT. Further, a PTI sent to one SLM may apply to a ship class of another SLM. A central point of contact would provide for a better or more complete distribution of PTIs and prevent duplication of effort. It would also provide the control and recording necessary to keep track of all PTIs and insure that needed support is provided and information disseminated to all concerned organizations. The most logical single organization to be designated as the receiving point for PTIs is NAVSEA-04K. Therefore, each SLM, upon receiving a letter proposing a technical change or originating a PTI internally, should fill out a PTI form and submit it to NAVSEA-04K for information and processing.

3. Specific responsibilities should be assigned to each organization involved in the processing of PTIs. This would include review and monitoring actions within NAVSEA and NAV-MAT, as well as processing action by the SLMs and their support organizations.

#### D. MILITARY/TECHNICAL IMPROVEMENT PLANS

Section II.C.2. of this report points out that Military Improvement Plans (MIPs) and Technical Improvement Plans (TIPs), are not being used as originally intended. The procedures have been largely subverted, particularly with regard to the MIP. The following recommendations are presented concerning MIP and TIP reports.

1. When PMIs are received by OPNAV-436 and PTIs received by NAVSEA-04K, they should be assigned a PMI/PTI number and entered in the SAMIS. This number should be directly traceable to the SHIPALTs resulting from the approved PMI/PTI. In addition to the usual type of information entered into SAMIS along with the PMI/PTI number (including title, originator, and sponsor), a set of scheduled and actual dates for certain check-points (e.g., "approved for C&F study," "C&F study complete," "MP&TS analysis complete") should be entered. This type of data will give all FMP participants a tool by which they can plan and program their involvement and provide monitoring and controlling reports to such organizations as NAVMAT-0412 and NAVSEA-0461.

One method of accomplishing this task is to restructure the present MIP/TIP portion of the SAMIS to accommodate these changes and begin reissuing MIP and TIP reports based on PMI/PTI numbers. The Study Group has been informed by the SAMIS project office, however, that because of the way the SAMIS is designed and programmed, this restructuring is not practical and that a preferable method would be to add a new module or subsystem to SAMIS for this purpose. The Study Group was also informed that there is already a NAVSEA development underway to enter PMI/PTI numbers into SAMIS for the purpose of tracking through to resulting SHIPALTs. Therefore, these recommendations may not be too extensive to implement.

NOTE: The following constraint--"No SHIPALT may be listed in the AMT without having an originating PMI/PTI number assigned and listed in the MIP/TIP"--should be added to existing constraints on O&MN and OPN budget matching and the purchase of materials. This will provide continuity, visibility, and controllability to the entire path of a PMI/PTI from origination to ship installation.

2. The PMI and PTI reports should be sent to each originating organization, each organization involved in processing, monitoring or controlling the PMI/PTI, and each organization required to provide, or interested in providing, support (including MP&TS analysis, technical documentation, and provisioning) for PMI/PTIs. This would be the earliest point in time at which all PMI/PTIs could be positively identified and therefore be evaluated for possible MP&TS implications (as well as ILS implications overall).

3. Approved PMIs and PTIs from the new SAMIS subsystem should then be prioritized and assembled in a preliminary AMT (as will be accomplished under the new prioritization categories in OP-03 INST 4700.7) prior to the FMP conference. These early reports should prove of benefit to FMP conference participants prior to their attendance at the conference.

#### MP&TS CONSTRAINTS

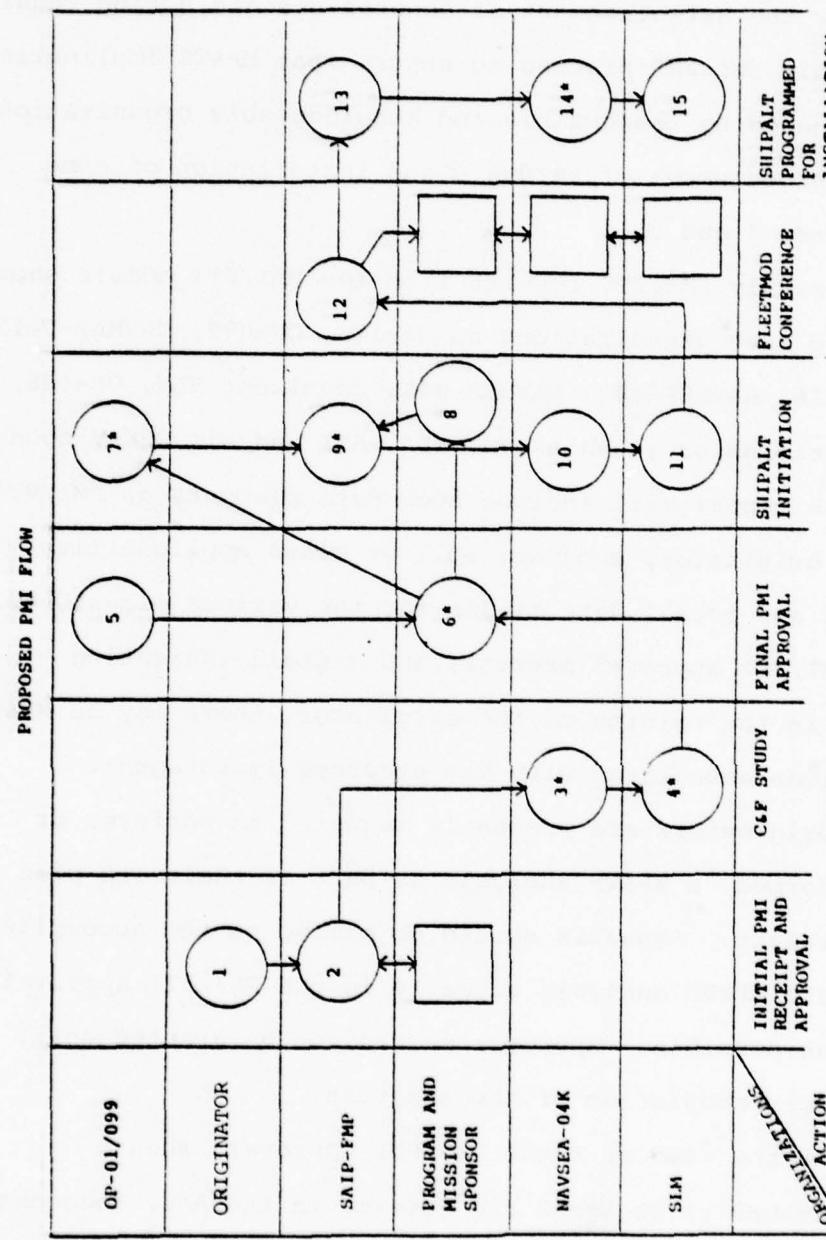
If the PMI/PTI module within SAMIS is developed and implemented, a positive audit trail for proposed improvements from their point of inception, through SHIPALT initiation, to

installation aboard ship will have been established. This will allow the establishment of constraints and action requirements within the FMP process to ensure that MP&TS implications are considered by responsible and knowledgeable organizations prior to procurement of hardware and installation of same (see Figures 4 and 5).

1. Monthly PMI/PTI reports from the PMI/PTI module should be sent to such organizations as OP-122, OP-099, NAVMAT-0412, NAVSEA-0416, NAVSEA-047, NAVSEA-04K, cognizant SLM, OP-436, and the originator (such as PM, PDA, AM) and his OPNAV sponsor. This report will include such data elements as PMI/PTI numbers, originator, subject, hull or class applicability, scheduled and actual date fields for the various milestones in the PMI/PTI approval process, and a field indicating whether, in the opinion of the originator, there may be MP&TS implications associated with the proposed improvement.

2. Originators are presently required to perform, or have performed, a MP&TS analysis as part of their ILS plan or its equivalent. Emphasis should be placed on the accomplishment of the MP&TS analysis as early in the PMI/PTI approval process as possible. Approval should not be granted until satisfactory completion of the analysis.

3. At the time of final PMI/PTI approval, when a SHIPALT number is assigned and entered in the AMT, documented proof that a MP&TS analysis has been made by a knowledgeable



- \* NAVSEA-04 records event in PMI/PTI module and distributes periodic report updates
- 3\* PMI initial MP6TS Indication
- 4\* C&P Study completed
- 6\* MP6TS analysis complete
- 7\* MP6TS analysis validated/approved
- 14\* PMI S&P-FMP approved
- 14\* SHIPALT programmed in PHP

- = Primary Responsibility/Actions
- = Secondary Responsibility/Action

Key to numbered steps is on following page.

Figure 4a

PROPOSED PMI FLOW

Key to numbered steps:

1. Originator submits PMI form.
2. PMI received, consultation with OPNAV sponsors, approval/disapproval action.
3. NAVSEA-04K determines cognizant SLM.
4. SLM accomplishes C&F Study.
5. OP-01/099 provides information and documentation requirements for MP&TS analysis.
6. Program/mission sponsor ensures that MP&TS analysis is performed by the PM/PDA/AM.
7. OP-01/099 reviews MP&TS analysis, validates analytical methods, and determines supportability of MP&TS impacts.
8. OPNAV sponsor decides if he is willing to support the MP&TS requirements of the PMI.
9. SAIP-FMP approves or disapproves PMI. Disapproved PMI is returned to originator. Approved PMI is assigned SHIPALT number, preliminary AMT priority, and forwarded to NAVSEA-04K. The PMI cannot be approved if MP&TS analysis documentation has not been provided and validated.
10. NAVSEA-04K receives approved PMI and forwards to cognizant SLM.
11. SLM receives approved PMI, requests AIR from originator, and initiates SHIPALT proposal.
12. At the next FLTMOD Conference, the SHIPALT will be considered for a final priority by conference attendees.
13. Once final priority is set, OP-436 will program the SHIPALT for installation.

Figure 4b

PROPOSED PMI FLOW (Cont.)

14. NAVSEA-04K programs for the SHIPALT in the FMP (CNO Ship Sheet) and forwards to SLM.

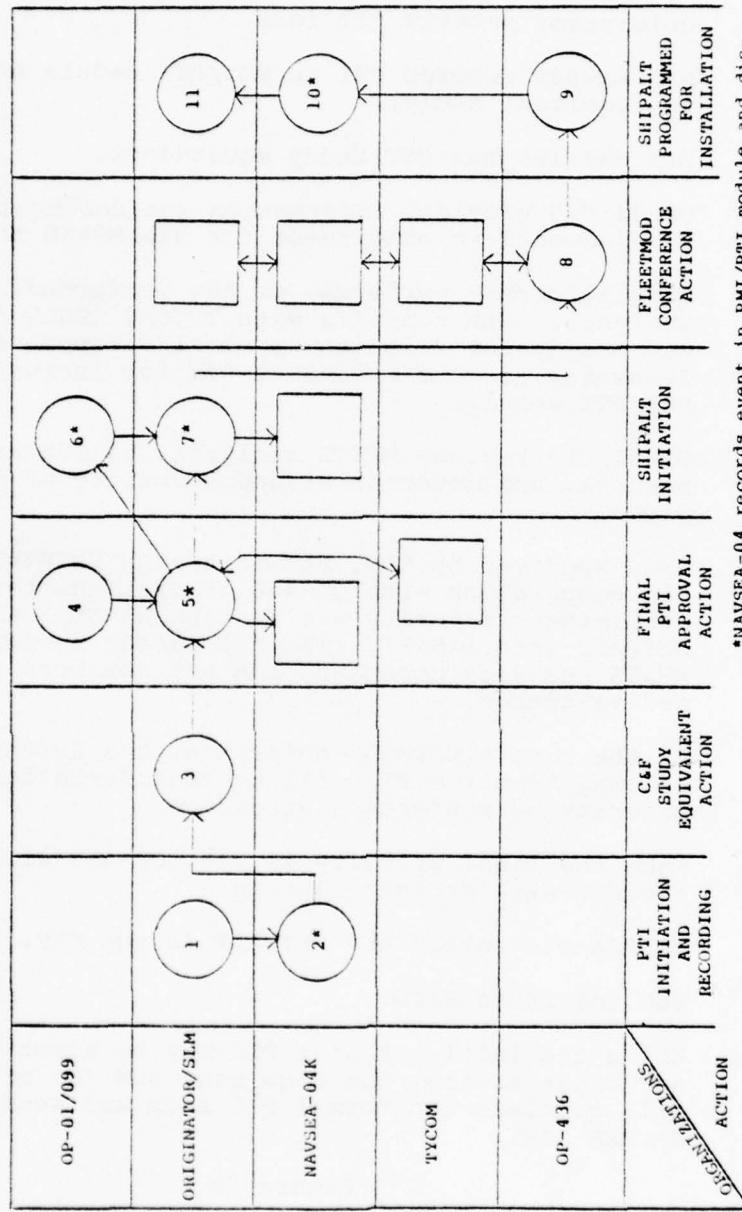
15. SLM commences SHIPALT development.

Note: While the initiator of a PMI may be almost anyone or any organization, the originator (such as PM, PDA, AM) usually completes the formal PMI form and sends it to OP-436 (SAIP-FMP).

Figure 4b

V-11a

PROPOSED PTI FLOW



\*NAVSEA-04 records event in PMI/PTI module and distributes periodic report updates

2\* PTI INITIATION AND RECORDING

5\* C&F STUDY EQUIVALENT ACTION

6\* PTI INITIATION AND RECORDING

7\* PTI INITIATION AND RECORDING

10\* PTI INITIATION AND RECORDING

2\* PTI INITIATION AND RECORDING

5\* C&F STUDY EQUIVALENT ACTION

6\* PTI INITIATION AND RECORDING

7\* PTI INITIATION AND RECORDING

10\* PTI INITIATION AND RECORDING

Key to numbered steps is on following page. Figure 5a

PROPOSED PTI FLOW

Key to numbered steps:

1. Originator submits PTI form.
2. NAVSEA-04K records PTI in PMI/PTI module and forwards to cognizant SLM(s).
3. SLM carries out C&F Study equivalent.
4. OP-01/099 provides information and documentation requirements to originator for his MP&TS analysis.
5. Originator/SLM performs, or has performed, MP&TS analysis. SLM consults with TYCOM, OPNAV sponsor, and originator prior to approval/disapproval action. Transmits results to NAVSEA-04K for inclusion in PMI/PTI module.
6. OP-01/099 reviews MP&TS analysis, validates analytical methods, and determines supportability of MP&TS impacts.
7. When approved by SLM, SLM initiates SHIPALT action (in cooperation with OP-436, SHIPALT number and AMT Preliminary priority are set and NAVSEA-04K enters SHIPALT into SAMIS). The PTI cannot be approved if MP&TS analysis documentation has not been provided and validated.
8. At the next FLEETMOD Conference, the SHIPALT(s) resulting from the PTI will be considered for a final priority by conference attendees.
9. Once the final priority is set, OP-436 will program the SHIPALT for installation.
10. NAVSEA-04K enters the SHIPALT in the FMP.
11. SLM initiates BACD.

**Note:** While the initiator of a PTI may be almost anyone or any organization, the cognizant SLM (as originator) will complete the formal PTI form and send it to NAVSEA-04K.

Figure 5b

organization should be sent to OP-122, OP-099, NAVMAT-0412, NAVMAT-042, and NAVSEA-0461. Items not having this documented proof, or not having a signed statement from the OPNAV Sponsor that an MP&TS analysis is not required, would not be programmed for installation into the FMP.

4. Reports from SAMIS regarding SHIPALTS programmed for installation as the result of approved PMI/PTIs that have MP&TS implications should be sent to the same organizations listed in item 1 above. This would provide assurances to those organizations that all SHIPALTS have had the necessary analysis or have been authorized by CNO (as in the case of Emergent QRC, and RDC items) to bypass the analysis.

5. Consideration should be given to applying these actions and constraints to all ILS rather than MP&TS only. In that way, the entire package of hardware support would be properly addressed and instructions such as proposed NAVMAT 4000.XX would be more easily implemented (assuming extension to the FMP) and Fleet MP&TS problems caused by lack of other ILS elements substantially reduced.

#### F. ORGANIZATIONS

There are five organizations which should play a stronger role in the monitoring and control of the PMI/PTI process and thereby exert influence over the early identification of MP&TS implications. These organizations are OP-01, OP-099, NAVMAT-0412, NAVMAT-042, and NAVSEA-0461. (NAVMAT-0412 is the

Maintenance Technical Branch of the Operations and Readiness Division within the Deputy Chief of Naval Material (DCNM) for Operations and Logistics. NAVMAT-042 is the Acquisition Logistics Division. NAVSEA-0461 is the ILS Program Branch of the Logistic Support Programs Division within the Fleet Support Directorate.)

1. OP-01, OP-099, and, in particular, OP-122, the new HARDMAN Project Office, should be the overall authority in assuring that the MP&TS implications of PMIs and PTIs are properly acknowledged and addressed. Two of the tasks to be accomplished by the HARDMAN project are the determination of requirements for manpower/hardware tradeoffs within the WSAP and the development of a reporting and control system as a tool for keeping track of all projects underway. The Study Group recommends that both of these efforts be extended to capture that data on PMI/PTIs necessary to exert similar control on proposed changes within the Navy. In this way, all projects and proposed changes would have an authoritative, knowledgeable, and comprehensive MP&TS analysis, if one is required.

2. NAVMAT-0412, NAVMAT-042, and NAVSEA-0461, which are presently acting only in a "reactive" mode towards ILS requirements in general and MP&TS requirements in particular, should assume a more active role in monitoring and controlling their parent organization activities. The PMI and PTI reports

(assuming the recommendation described in Section V.E. above is implemented) and, eventually, the reports from the HARDMAN Reporting and Control System, would provide the tools necessary for this function. This function has always been included in these organizations' charters but they have never been provided the tools to accomplish these missions. These reports, plus some reprogramming of manpower funds internal to their organizations, will allow them to provide this vital monitoring and controlling function.

G. EMERGENT, QUICK REACTION CAPABILITY, AND RAPID DEVELOPMENT CAPABILITY REQUIREMENTS

OPNAVINST 4720.2D presently provides procedures for the processing of Emergent, QRC, and RDC items in the FMP. These procedures are general in nature and there are three areas needing emphasis:

1. Emergent, QRC, and RDC items should be required to follow the same approval circuit that other items entering in the FMP require. This process may be considerably accelerated and may be abbreviated, if necessary, but should essentially stay within the normal system.
2. Items requiring classification as Emergent, QRC, and RDC should have SAIP approval prior to entering the approval circuit.
3. OP-436, the SAIP-FMP-WG (Working Group), should police and enforce these provisions resolutely.

#### H. INSTRUCTIONS

The final recommendation is to revise the existing instructions to bring them in line with those recommendations that are implemented. The basic instruction to be revised is OPNAVINST 4720.2D, followed by NAVSEAINSTS 1543.1, 4720.3, and 4105.1. There are a few ILS and MP&TS instructions which will also require some modification. Since the revisions to these instructions will depend wholly on the extent of implementation of the recommendations in this section, no attempt has been made to provide actual changes to the instructions. It is recommended that the MODMAN Study Group charter be extended beyond the study to provide central management of necessary documentation, procedural, organizational, and staffing.

#### I. MARGINAL RESOURCE REQUIREMENTS

The recommendations of this section should be implemented only if the marginal resource requirements identified in Section IV.17. are made available.

#### J. SUMMARY

The following is a summary of the MODMAN Study recommendations:

- C&F Study Funding
  - Require each PMI to have a C&F Study.

- Require each PTI to have a C&F Study equivalent or be certified that none is required.
- Shift primary budgeting source for C&F Studies from NAVSEA-04K to responsible PM, PDA, or Acquisition Manager.
- Retain central management control of C&F Study process within NAVSEA-04K.

- PMI/PTI

- Develop specific format for all PTI submittals similar to PMI format.
- PMI/PTI forms should provide guidelines for originator in making his initial assessment of MP&TS implications.
- Designate a single organization (NAVSEA-04K) to which all PTIs must be sent by the SLMs.
- Assign specific responsibilities to each involved organization.

- MIP/TIP

- Develop a new SAMIS subsystem for tracking PMI/PTIs from origination to approved SHIPALTS.
- PMI/PTIs should be assigned numbers and entered into the new SAMIS subsystem, including scheduled dates for primary approval steps.
- Send reports to all organizations supporting PMI/PTI approval.
- Assign a preliminary priority to PMI/PTIs in order to provide a preliminary AMT report.

- MP&TS Constraints/Actions

- Distribute periodic PMI/PTI reports to all involved organizations.
- Emphasize requirement for PM, PDAs, Acquisition Managers, and OPNAV sponsors to perform, or have performed, MP&TS analyses.

- Require certification to be provided to substantiate that MP&TS analysis has been performed.
- Organizations
  - OP-01/OP-099 should be given overall authority in assuring that MP&TS implications of proposed improvements have been properly acknowledged and addressed.
  - SAIP-FMP charter be revised to reflect DCNO Manpower (OP-01) and the DMSO Training (OP-99) as permanent vice associate members.
  - NAVMAT-0412, NAVMAT-042, and NAVSEA-0461, which presently act in a "reactive" mode towards ILS requirements in general and MP&TS requirements in particular, should assume more active roles in monitoring and controlling their parent organization activities.
- Emergent, QRC, and RDC Items
  - These should follow same approval circuit as other items (accelerated, if necessary).
  - These should receive SAIP-FMP approval prior to entering approval circuit.
- Instructions
  - Revise existing instructions to reflect those MODMAN recommendations that are implemented.
  - MODMAN working group charter should be extended beyond the study to provide central management of necessary documentation changes.

## SECTION VI

### RECOMMENDED PLAN OF ACTION AND MARGINAL RESOURCES

The findings and recommendations of the MODMAN Study presented three implementation alternatives. These include: (1) no implementation, (2) full-scale implementation, and (3) phased implementation. Alternative (1) is unacceptable because action must be taken to overcome manpower and training problems associated with the FMP. This was the underlying purpose of the Study. Alternative (2) is considered unrealistic because of the magnitude of resources (money and manpower) that would be required at the outset. A phased implementation program, however, will minimize initial costs and provide representative programs upon which definitive resource requirements can be based. Alternative (3) has been selected for these reasons.

Parameters and criteria for structuring a phased implementation plan are as follows:

- Programs involved in the initial phases of implementation should contain discrete, measurable events where improved performance resulting from implementation can be evaluated against previous performance. These programs should also be such that actual costs of implementation can be readily determined.
- Duration of the phased implementation program must span a long enough period of time to include a significant number of cycles of alteration evolutions. This is necessary in order to provide a valid sample for evaluation decisions.

- Front-end expenditures should be minimized while providing a measure of true costs.
- Programs involved in the initial phases of implementation must be representative of the programs of activities awaiting outyear implementation.

Based on these constraints, the proposed implementation plan has been established as follows:

- Preliminary planning 10/80 - 9/81
- Cruiser/destroyer implementation 10/81 - 9/82  
(Phase I)
- Submarine/aircraft carrier implementation (Phase II) 10/82 - 9/83
- Amphibious/combat support ship implementation 10/83 - 9/84
- Full Scale implementation 10/84 -----  
(Phase III)

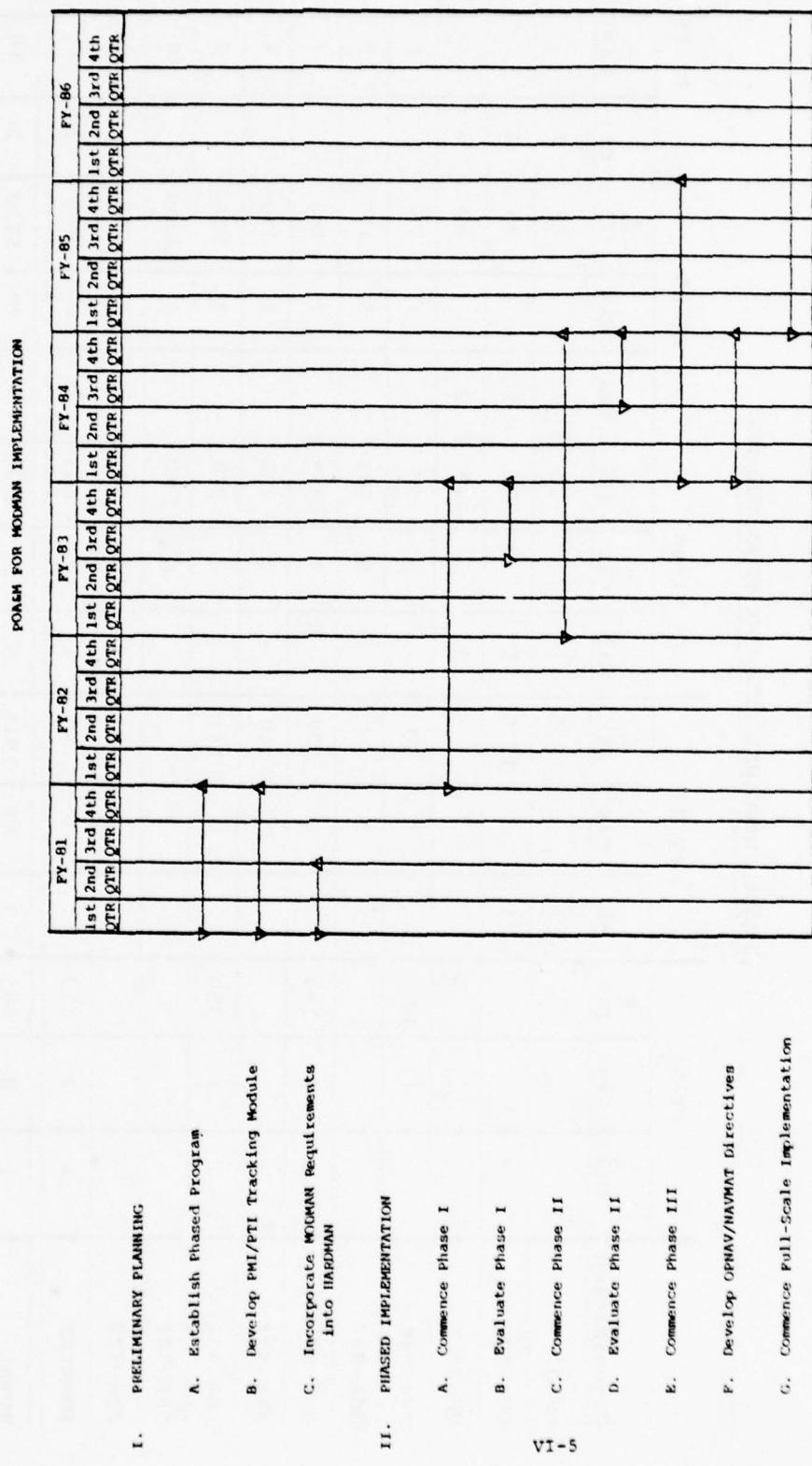
This selection was made by examining the resource requirements shown in Table 3 and based on the program constraints described above. Table 3 presents the implementation candidates and indicates that the submarine warfare sponsor and type desk (OP-02/SEA-924) will require the least additional resources. However, programs of these sponsors were not considered to be fully representative. On the other hand, OP-03 (Surface Warfare) sponsors more than 75% of all alterations in the modernization program. OP-05 and the Air Type Desk (SEA 942) has the second fewest additional resource requirements but only by less than .02% over the OP-03/SEA-934 combination. OP-05/SEA 942 is also not as representative as the surface warfare sponsor and type desk. Therefore, cruiser/destroyer programs were selected for Phase I.

TABLE 3  
IMPLEMENTATION CANDIDATES

SPONSOR	TYPE DESK	BILLETS		\$ (K)
		MILITARY	CIVILIAN	
OP-02	SEA-924	0	4	370
OP-03	SEA-934	1	2	556
OP-03	SEA-941	1	8	2,225
OP-05	SEA-942	2	2	545

Figure 6 presents the recommended POA&M for phased implementation. Since Phase I will consist of MODMAN implementation for proposed improvements to cruiser/destroyers, this will require additional resources within OP-03 and SEA-934. Phase II will consist of MODMAN implementation for submarine and aircraft carrier modifications, requiring resource increments within OP-02, OP-05, SEA-924, and SEA-942. Phase III will introduce the MODMAN program to auxiliary ship alterations and require additional resources within SEA-941.

Table 4 presents the marginal resource requirements for phased-in implementation. Resources required by OP-940, SEA-04K, SEA-047, SEA-06, and NAVELEX are gradually phased in throughout the implementation program since these groups will support the programs of all warfare sponsors.



9 March 1979

FIGURE 6

TABLE 4  
PHASED MARGINAL RESOURCE REQUIREMENTS

Organization	FY-82			FY-83			FY-84			FY-85			FY-86		
	Mill	CIV	\$ (K)	Mill	CIV	\$ (K)	Mill	CIV	\$ (K)	Mill	CIV	\$ (K)	Mill	CIV	\$ (K)
OP-03		1	12.5	1			25	1		25	1		25		25
OP-940		1	12.5	1			25	1		25	1		25		25
OP-05				2			25	2		50	2		50		
SEA-04K	1	12.5	1	25		1	25		1	25		1	25		25
SEA-047		2	97		5	285		5	339		5	339		5	339
SEA-06	4	190	7	358		7	395		7	395		7	395		7
SEA-924			3	218		4	358		4	370		4	370		4
SEA-934	1	350	2	544		2	556		2	556		2	556		2
SEA-941					6	1425		8	2200		8	2225		8	2225
SEA-942		1	373		2	533		2	545		2	545		2	545
NAVELEX	1	2	113	1	4	275	1	7	463	1	11	582	1	11	632
TOTAL	1	8	665	3	20	1915	5	34	4115	5	40	5112	5	40	5187

APPENDIX A  
STUDY DIRECTIVE AND PLAN



DEPARTMENT OF THE NAVY  
OFFICE OF THE CHIEF OF NAVAL OPERATIONS  
WASHINGTON, D.C. 20350

IN REPLY REFER TO  
Ser 96/90211

15 APR 1977

From: Chief of Naval Operations  
To: Distribution List

Subj: Study Directive for Manpower Implications of the Fleet Modernization Program

Ref: (a) CNO SECRET ltr ser 96/588959 of 4 Oct 1976;  
Subj: CNO Studies and Analyses Program for  
FY-1977 (CSTAP-77)

Encl: (1) Guidance for CNO Studies and Analyses  
(2) Manning Requirements for the Study of Manpower  
Implications of the Fleet Modernization Program

1. Title. Manpower Implications of the Fleet Modernization Program (MODMAN)

2. Type. CNO in-house study with contractor support.

3. Background. The Fleet Modernization Program (FMP) provides phased resources for alterations to ships based on continued military, technical and type commanders' selected improvements. Current procedures for analyzing the impact of these ship improvements on Manpower, Personnel and Training Support (MP&TS) are insufficient. MP&TS considerations, which are central to the supportability of planned alterations and the FMP decision process, are not adequately addressed.

a. Despite the detail and depth of documentation and directives governing the FMP process, serious problem areas regarding the establishment of MP&TS requirements, requisite skill levels, and their true costs have emerged. The dramatic increase in the costs associated with military manpower in recent years has placed high levels of interest upon early identification of the manpower requirements and skills associated with the acquisition of new higher technology systems. Acquiring qualified people, developing training procedures and facilities, and providing the skills required by a system under development often takes as much time as the development of the system itself. The failure to fully identify MP&TS implications in the early stages of ship alteration development has led to the development

and production of systems which require specialized skills in excess of those available at the time the proposed alteration is approved. In addition, rising manpower costs have generated life cycle costs far in excess of those originally estimated. Earlier and more rigorous consideration of MP&TS implications could cause FMP decisions to move toward more cost-effective alteration alternatives and assure adequate on-board skills for the operation and maintenance of the new equipment or systems.

b. Further complicating the problem is the way the DOD Weapon System Acquisition Process is structured around the overall program costs. For example: High priority/expensive major programs ( 200M) receive high visibility, and consequently closer and earlier MP&TS scrutiny; Lower priority/less expensive programs ( 20M) often receive less thorough manpower analyses. Taken individually, the less expensive programs may not appear to have significant manpower implications. Because of this, the personnel system is often expected to provide the needed individuals without special planning and programming. However, the aggregate requirements generated by many small acquisition programs have a major impact on manpower and training requirements, and consequently on weapon systems costs.

c. The multiplicity of organizational involvements within the Fleet Modernization Program has made it increasingly difficult to pinpoint the responsibilities and milestones for early definition of manpower requirements.

4. Objective. Analyze the MP&TS implications associated with the backfitting of systems and/or equipments into existing platforms. Develop procedures to identify MP&TS requirements, their magnitude and their related costs, and to assess their projected availability prior to the programming of alterations for accomplishment within the FMP. In order to accomplish these objectives, the study will:

a. Identify who is required to make MP&TS decisions related to all military and technical ship alterations and improvements programmed during the FMP process and describe the decision requirements.

b. Determine what authority the decision maker has and to whom he is explicitly responsible.

c. Identify the reporting and management information systems available to and used by the decision maker.

d. Review the timeliness of current assessments of MP&TS requirements and determine when these assessments should be made throughout the FMP process; in addition, analyze the effect of late changes to the FMP ship package or ship schedule.

e. Identify the methodologies and data bases used and/or required in reaching MP&TS decisions.

f. Identify organizational capabilities required for the performance of MP&TS assessments.

g. Provide recommended changes to appropriate planning and implementing directives to effectively link the Navy Training Plan and FMP processes to facilitate consideration of MP&TS requirements.

5. Specific Guidance.

a. Working within the framework of the existing FMP process, the study should conduct a critical examination of the MP&TS requirements determination process associated with all types of ship alterations. Building upon this foundation, a new or improved structure and process should then be developed. The new structure should be clearly oriented toward emphasizing the impact of ship alteration decisions on Navy manning and skill levels and ultimately on the life cycle cost of new hardware procurements.

b. The study should clearly identify decision points during the FMP process where MP&TS assessments should be made, the manpower, personnel and training issues which should be addressed, the methodologies and data sources available or needed to credibly perform such analyses.

c. The study should establish the reporting and review functions needed to support identification of MP&TS implications early in the FMP process, and to ensure consideration of these implications in program decisions at all levels.

d. The study should identify marginal resource requirements of proposed procedural improvements and should determine the impact of these improvements on the various organizations in terms of cost, personnel and capabilities.

e. The results of the above tasks should be incorporated into a recommended plan of action for the implementation of the study developed process.

6. Coordination and Review

a. The Study Sponsor is the Deputy Chief of Naval Operations (Manpower) (OP-01).

b. The CNO Project Officer is LCDR J. K. Ruland, USN, (OP-124D).

c. An Advisory Committee, chaired by the Assistant Deputy Chief of Naval Operations for Manpower Planning and Programming (OP-01C), will be composed of OP-02, OP-03, OP-04, OP-05, OP-090, OP-094, OP-095, OP-099, OP-90, and OP-96. The Chief of Naval Material, Naval Sea Systems Command, Naval Air Systems Command and Naval Electronics Systems Command are requested to participate as Advisory Committee members. The President, CNA and the Naval Education and Training Command are invited to participate as Advisory Committee members. Advisory Committee members are requested to forward, to the Project Officer, within two weeks from the date of this directive, their nominations for the points-of-contact.

d. Study Group membership requirements are listed in enclosure (2). Offices and commands designated in enclosure (2) are requested to forward, to the Project Officer, within two weeks from the date of this directive, their nominations for the Study Group personnel requirements.

e. The Director, Systems Analyses Division (OP-96), shall conduct a technical review to monitor progress and ensure quality of the study. During the course of the study, this effort shall include review of working papers and reports for validity and completeness and an independent technical evaluation of the final report. Results of the review shall be promulgated to the Advisory Committee and the CNO Project Officer by OP-96.

f. CDR. D. H. Demand, USN, OP-964D4, is designated Study Monitor.

7. Reporting.

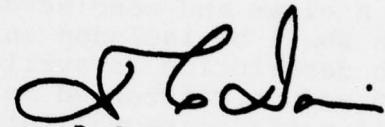
a. The study plan is to be submitted to the Advisory Committee within four weeks of the date of this directive.

b. The Project Officer will submit monthly progress reports to Op-96 in accordance with current directives.

c. Meetings of the Advisory Committee shall be called by the Chairman at appropriate times to review and evaluate study progress and trends. The committee shall meet at least once each quarter.

d. Working papers will be submitted to the Advisory Committee as they become available.

e. A draft final report will be submitted to the Advisory Committee by September 30, 1977.



D. C. DAVIS  
Director

**Distribution:**

CNO (Op-01, 02, 03, 04, 05, 090, 094, 095, 099, <sup>Op-96</sup> ~~Op-96~~ <sup>Planned</sup> ~~Planned~~ 96)  
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GUIDANCE FOR CNO STUDIES AND ANALYSES

1. The assumptions which are of great importance to the outcome of the analysis shall be clearly stated in the introduction to the report. Also, at the beginning of each chapter, annex, or appendix, the complete set of assumptions which are applicable shall be listed. The analysis shall determine the effects of alternative assumptions when these are critical to the study results.
2. The analysis shall identify the key parameters (weapons systems effectiveness values, costing techniques) which greatly affect the study results. Best estimates shall be used for the values of these parameters; in addition, greater and lesser values spanning the range of reasonable values for each parameter shall be used to determine the sensitivity of the study results to changes in these key parameters.
3. A clear and concise description of each model or simulation shall be included in an appendix to the report unless such description is available in an already published document and is referenced in the report. This description shall explain in qualitative terms (including a logic diagram) the general methodology which provides the basis for the model. Detailed design specifications for each model, or reference to a permanent OPNAV file in which these design specifications are held, shall be included in the permanent files of this study.

MANNING REQUIREMENTS FOR THE MANPOWER  
IMPLICATIONS OF THE FLEET MODERNIZATION  
PROGRAM STUDY

1. General.

a. Personnel assigned to the Study Group should have general or specific knowledge of Fleet Modernization Program procedures, and should also be familiar with the methodology for determination and programming of manpower requirements. Each representative will be responsible for keeping his parent command informed of the progress of the study and making the view of his parent command known to the study project officer.

b. It is appreciated that personnel having the above qualifications will be involved in other aspects of the overall acquisition manpower/personnel/training system. The level of effort required of study Group members will therefore be limited to part-time participation. The Study Group shall operate under the direction of the Project Officer and shall provide guidance and information to the study contractor. Study Group members shall be required to devote approximately a 10% level of effort participation.

2. Composition.

<u>Command</u>	<u>Rank</u>	<u>Specialty</u>
OP-01 (OP-124D)	LCDR	CNO Project Officer
OP-02 (OP-29)	CDR/LCDR	Submarine Manpower Requirements - New Acquisitions
OP-03 (OP-39)	CDR/LCDR	Surface Warfare Manpower Requirements New Acquisitions
OP-04 (OP-43)	CAPT/CDR	Ships Maintenance and Modernization
OP-05 (OP-59)	CDR/LCDR	Aviation Manpower Requirements - New Acquisitions
OP-094	CDR/LCDR	Manpower/Hardware Fleet Requirements

<u>Command</u>	<u>Rank</u>	<u>Specialty</u>
OP-095	CDR/LCDR	Manpower/Hardware Fleet Requirements
OP-90	CDR/LCDR	Manpower & Training Planner
OP-96	CDR/LCDR	Manpower Analyst
OP-099	CDR	Navy Training Plans
CHNAVVERS (PERS-5)	CDR	Enlisted Rating Coordinator
NAVMAT (NMAT-042)	CDR/LCDR or Civ. Equiv.	Fleet Modernization Program Procurement/ Acquisition Logistics Analyst
NAVSEASYS COM (NSEA-06)	CDR/LCDR or Civ. Equiv.	Manpower & Training Support Specialist
NAVSEASYS COM (SEA-042)	CDR/LCDR or Civ. Equiv.	Fleet Modernization Program Management Analyst
NAVSEASYS COM (SEA-047)	CDR/LCDR or Civ. Equiv.	Personnel & Training Support
NAVSEASYS COM (SEA-92/ 93, 94)	CDR/LCDR or Civ. Equiv.	Ship Logistic Manager
NAVAIRSYS COM (AIR-537)	CDR/LCDR or Civ. Equiv.	Ship Installations
NAVELEXSYS COM (ELEX-04)	CDR/LCDR or Civ. Equiv.	Training Support
CNET	CDR/LCDR or Civ. Equiv.	Training Support - New Acquisitions

3. Reporting. All personnel shall report within two weeks from the date of this directive, when nominated, to the CNO Project Officer (OP-124D) for indoctrination and Study Group reporting instructions. Reporting can initially be done by telephone (OX4-1078 LCDR J.K. RULAND, OP-124D).

STUDY PLAN FOR MANPOWER IMPLICATIONS  
OF THE FLEET MODERNIZATION PROGRAM  
(MODMAN)

1. Tasks

a. Task 1. Analyze and describe the Navy's current procedures for Manpower, Personnel and Training Support (MP&TS) planning and review as they apply to the Fleet Modernization Program (FMP).

(1) Sub-Task 1-1. Conduct a literature search of instructions, directives, and research efforts pertaining to this analysis.

(2) Sub-Task 1-2. Identify and interview key personnel/decision makers involved in the FMP and Ship Manpower Document (SMD) processes.

(3) Sub-Task 1-3. Identify, review and analyze any methodologies and information sources used in reaching MP&TS decisions.

(4) Sub-Task 1-4. Evaluate the timeliness of current assessments of MP&TS requirements and identify key points when MP&TS decisions are made.

(5) Sub-Task 1-5. Identify and evaluate existing management information systems pertaining to the support of manpower, personnel and training.

(6) Sub-Task 1-6. Prepare a working paper consolidating the data gathered in the above sub-tasks into a description of the current FMP process, upon which improvements can be developed.

b. Task 2. To the extent necessary, develop procedures, determine responsibilities, examine alternatives, and make necessary recommendations to fully integrate consideration of MP&TS implications into the FMP process.

(1) Sub-Task 2-1. Revise existing, or develop new, procedures incorporating any proposed MP&TS improvements to the FMP.

(2) Sub-Task 2-2. Make specific recommendations for needed modifications to existing management information systems applicable to MP&TS.

(3) Sub-Task 2-3. Redefine and/or confirm the MP&TS responsibilities of those organizations/activities involved in the FMP process.

(4) Sub-Task 2-4. Identify revisions to existing directives, or recommend new directives as necessary, to incorporate any new or revised procedures to the FMP. Propose a schedule for promulgating these new or revised directives.

(5) Sub-Task 2-5. Prepare a working paper consolidating the results of the above sub-tasks.

c. Task 3. Incorporate the results of Task 1 and 2 into a final report that provides for new or modified procedures to more rigidly enforce the MP&TS analysis and review process in the FMP, including development of an implementation plan and concomitant marginal resource requirements.

(1) Sub-Task 3-1. Identify marginal resource requirements of proposed FMP MP&TS procedures and determine the impact on the various organizations in terms of cost, personnel, and capabilities.

(2) Sub-Task 3-2. Prepare a draft final report which incorporates all the findings, analyses and recommendations of the study, and includes an implementation plan and a definition of required sources.

(3) Sub-Task 3-3. Prepare a final report which incorporates or resolves the comments made on the draft final report.

d. Tasks Not Engaged. While this Study will address the backfitting of equipments into existing platforms through the FMP process, it will not address the manpower implications of the Weapon System Acquisition Process previously covered under the Military Manpower versus Hardware Procurement (HARDMAN) Study.

2. Scope and Depth. The study will encompass all areas of the FMP process that have an impact on MP&TS. For the purpose of this study, the definition of the FMP process spans the following:

a. The originator of any change alteration or improvement. This includes such diverse activities as RDT&E, HM&E, TYCOMS, Contractors and Engineering activities.

b. The originating documents.

c. The entire flow of the proposed improvement until it becomes part of an approved ship alteration package.

d. Those incidents downstream that cause additional impact on MP&TS such as removals, schedule changes, changes in required CFE, etc.

The types of analyses will vary within each task depending on the data gathered and the level of detail required to determine MP&TS. The study will identify the key points, and required levels of detail, during the development of proposed ship improvements at which an assessment of MP&TS implications is required in order to ensure their consideration at decision-making levels.

3. Manpower Allocation. Tasks 1 through 3 will require the services of the project officer, all members of the study group group within their functional areas of experience, and contractor support. The projected level of contractor support is 12 man-months of effort extending over a period of 5 months.

The Study Group members will provide initial points of contact for contractor information, will nominate candidate programs and hardware systems for investigation, will review working papers and reports, and will assess the adequacy of present charters, functions and controls. Any changes to Navy management decision policies will originate within the Navy study group and will be submitted to the advisory committee for consideration. In addition, Study Group members will be responsible for identifying the impact on their organization of any proposed recommendations concerning the FMP. This identification will include, but not be limited to, cost and number of billets, additional required skills, and manpower reductions.

4. Funding Allocation. Information Spectrum, Inc. will support this study under ONR contract. Approximate funding is \$14,000 for Task 1, \$26,000 for Task 2, and \$9,000 for Task 3.

5. Other Resources. One trip to Pensacola, Florida is planned to investigate the Naval Training Information System and its sub-systems.

6. Task Schedule.

a. Study Directive signed	15 April 1977
b. Contractor on Board	
c. Study Plan Approved	17 May 1977
d. Task 1 Findings Complete	22 June 1977

e. Task 2 Findings Complete	15 Aug 1977
f. Task 3 Marginal Resource Requirements	7 Sep 1977
g. Task 3 Draft Final Report	30 Sep 1977

7. Specific Guidance.

a. The principal thrust of the study is to identify the timing and level of detail required to structure a requirements determination, analysis, reporting and review system which will support identification of MP&TS implications early in the FMP, and ensure consideration of these implications in program decisions at all levels. Therefore, the analysis of the current manpower and training requirements reporting and review structure should answer the following questions:

(1) How early (or late) are manning implications identified in the FMP.

(2) What benefit, and to whom, would it be to identify manning earlier and/or with greater precision (quality, rates, NEC)?

(3) How does the quality and availability of manpower data presently impact on program decisions?

(4) What benefit would increasing the availability of data have on the decision process?

(5) What changes, other than improving the timeliness, and accuracy of a manpower data and tradeoff methodologies, would improve consideration of these (manpower) implications in program decisions?

b. In its assessment of required organizational changes, the study will interface any proposed changes with those organizational changes resulting from the HARDMAN Study, to avoid duplication of functions and effort.

8. Methodology.

a. Task 1.

(1) Sub-Task 1.1. Existing DoD, SECNAV, CNO, NAVMAT, SYSCOMS, and NAVCOMPT directives pertaining to the determination of MP&TS requirements for proposed ship improvements will be reviewed. Areas of inconsistent requirements will be identified. The study will be particularly alert to official documents outside the normal directive system which influence the decision

makers. Major research relevant to this study will be examined. Sources for this information include, but are not limited to, the following: the Defense Documentation Center (DDC), the Center for Naval Analyses Technical Library, the Defense Logistics Studies Information Exchange (DLSIE), the OP-01 Personnel Studies Library, and other libraries or information centers deemed appropriate.

(2) Sub-Task 1-2. The key personnel/decision makers involved in the FMP and SMD processes will be identified and an assessment made of their responsibilities and authority. These individuals will be interviewed to determine their concepts of the FMP process and its related MP&TS problems. Insight will be provided into the actual procedures that are followed. Informal as well as formal procedures will be identified and the causes for deviations from institutionalized procedures will be determined.

(3) Sub-Tasks 1-3 and 1-4. Any methodologies and information sources used in reaching MP&TS decisions within the FMP will be reviewed and analyzed by a detailed comparison of the results of Sub-Tasks 1-1 and 1-2 and by further structured interviews with personnel responsible for the early determination of MP&TS information. The results of this analysis, together with discussions with representatives of the Personnel and Training Analysis Office (PATAO) and the Navy Personnel Research and Development Center (NPRDC), will provide a basis for the determination of the key points during the FMP process at which MP&TS decisions should be made, as well as the level of detail required at each.

(4) Sub-Task 1-5. The Ship Alteration Management Information System (SAMIS), the Shipboard Equipment Configuration Accounting System (SECAS), and the Naval Training Information System (NAVTIS) will be evaluated for potential use in the determination and control of information necessary for MP&TS. In addition, other existing MP&TS management information systems will be identified and evaluated for possible interface with SAMIS.

(5) Sub-Task 1-6. A working paper will be prepared outlining in precise detail the procedures that are currently employed during the FMP process. In consolidating the data gathered by the previous sub-tasks, the working paper will describe how the FMP process actually works as well as how it is supposed to function. Recommendations will be provided for the resolution of conflicting information and requirements. The working paper will identify the key decision points, the organizations having responsibility for staffing and decision-making, the data requirements as well as data available, the relationship of manpower assessments and planning to the key decision points, and the current methods that are used to

calculate manpower requirements. The working paper will provide the baseline from which a new MP&TS requirements analysis and review process may be structured.

b. Task 2.

(1) Sub-Task 2-1. New or revised procedures to improve the FMP with regard to MP&TS will be developed as necessary. A detailed flow chart of the proposed movement of ship improvements from inception to installation will be constructed. An identification of key points, time frames and data availability will be included on the chart. An accompanying narrative, coded to flow with the chart, will detail how a proposed improvement is investigated to determine whether it has MP&TS implications, the extent of the implications, and whether the information necessary for the determination of MP&TS requirements can be satisfied to assure adequate on-board skills for the operation and maintenance of the new equipment or systems.

(2) Sub-Task 2-2. Based on the results of Sub-Task 1-5, and the data that is required by FMP managers to fully integrate assessments of MP&TS implications into proposed ship improvements, specific recommendations for changes/additions to those management information system having the greatest impact on, and applicability to, the FMP will be developed. These recommendations will consider the present state of development/operation of those systems, their ability to expand to accommodate MP&TS data requirements, and the degree of usefulness the system will have to the user.

(3) Sub-Task 2-3. An organizational chart will be developed illustrating the present responsibilities of each organization/activity contributing to the FMP. This chart will be coded to follow the flow chart developed in Sub-Task 2-1. A detailed list of new or revised responsibilities will be written and keyed to existing directives concerning the FMP.

(4) Sub-Task 2-4. Based on the list of new or revised responsibilities and related directives developed by Sub-Task 2-3, the new or revised procedures developed by Sub-Task 2-1, and the results of Sub-Task 1-1, revisions to the existing directives will be identified. If revisions to procedures and responsibilities are extensive, new directives will be recommended as required. A proposed schedule of promulgation will be developed to assure that an orderly transition is made to any new/revised methodology.

(5) Sub-Task 2-5. A working paper will be prepared consolidating the results of Sub-Tasks 2-1 through 2-4. This paper will discuss the overall impact on the FMP of any changes and recommendations made in Task 2. Emphasis will be placed

on benefits, early assessments of MP&TS implications, handling of QRC and RDC requirements, enforcement policy.

c. Task 3.

(1) Sub-Task 3-1. A marginal resource analysis of any proposed improved procedures and revised responsibilities will be performed to assess their impact on the various Navy organizations. The required resources will be identified in terms of the costs and number of billets required to support the proposed organizational activities, additional required skills and capabilities, as well as possible manpower reductions and cost savings within the organizations. Computer and other equipment costs will be specified, where applicable.

(2) Sub-Task 3-2. A draft final report will be prepared. This report will incorporate all the findings, analyses and recommendations of Tasks 1 and 2 and Sub-Task 3-1. In addition, study groups and Advisory Committee comments to the working papers of these tasks will be incorporated. A plan for the implementation of the study findings will be included as well as identification and definition of net resources needed for future system changes.

(3) Sub-Task 3-3. A final report will be prepared and issued. All comments on the draft final report will be included or resolved in this final report.

9. Effectiveness Criteria. Not applicable.

10. Reports.

a. Monthly progress reports will be submitted to OP-96 in accordance with OPNAV Instruction 5000.30.

b. Working papers and a final report will be submitted to the Advisory Committee in accordance with Sections 1 and 8 of this Study Plan.

11. Coordination

The study group will coordinate with mission and resource sponsors, program and project managers, Navy Personnel R&D Center, Bureau of Naval Personnel, Naval Postgraduate School, Office of Naval Research, Center for Naval Analyses, Chief of Naval Education and Training, Navy Human Resources R&D Advisory Council, Navy Research Advisory Committee, and other organizations as appropriate.

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STUDY OF THE MANPOWER IMPLICATIONS OF FLEET MODERNIZATION PROGR--ETC(U)

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MODMAN STUDY GROUP ROSTER

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R. S. Cole	CDR	OPNAV	OP-597C	697-8483	PNT/4E412
D. M. Bennett	CDR	OPNAV	OP-901D	697-9850	PNT/4D683
M. Ford	LCDR	OPNAV	OP-940C3	695-2375	PNT/5C633
H. R. Price	CDR	OPNAV	OP-951C2	697-3096	PNT/5D581
D. H. Demand	CDR	OPNAV	OP-964D4	697-6136	PNT/4A478
S. Underhill	CDR	OPNAV	OP-992F2	692-4745	BT1/1214
B. P. Hardy	CDR	CHNAVPERS	PEERS SW	694-1684	AA/1819
J. O. Flanagan	GS-15	NAVMAT	NMAT 0421	692-3012	CP-5/722
R. Ruppert	GS-13	NAVSEA	SEA 0421	692-8540	NC3/10E56
F. Conrad	GS-13	NAVSEA	SEA 047D	692-0803	NC3/10E30
P. J. Himes	GS-15	NAVSEA	SEA 6112	692-3662	NC2/7W66
R. Allen	GS-14	NAVSEA	SEA 924L	692-7305	NC3/7W48
L. Gordon	GS-15	NAVSEA	SEA 934B	692-0554	NC3/9W48
E. Fox	GS-14	NAVSEA	SEA 942P	692-7380	NC3/8W48
D. McGarrigan	GS-13	NAVAIR	AIR 53711B	692-3243	JP2/1160
J. Grunder	GS-13	NAVELEX	ELEX-04F	692-7490	NC1/4W48
J. P. O'Lear	CDR	CNET	N-525	904-452-4201	Pensacola

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Mr. R. Goldstein

Mr. L. Purdey

Dr. A. Rhode

**APPENDIX B**  
**DEFINITIONS**

APPENDIX B

DEFINITIONS

1. ADVANCE PLANNING LETTER - A document sent to the designated overhaul/ship alteration accomplishment activity to initiate planning, pre-fabrication, long-lead time material procurement, etc.
2. AMALGAMATED MIP/TIP (AMT) REPORT - The approved military and technical improvements from the MIP and TIP for each ship class are integrated and listed in priority order on the AMT for each ship class.
3. AUTHORIZATION LETTER - The document used by NAVSEA to authorize the accomplishment of FMP funded alterations. The letter serves four fundamental purposes:
  - (a) It authorized the accomplishment of those alterations specifically programmed for accomplishment in the Fleet Modernization Program.
  - (b) It provides general accounting data.
  - (c) It provides NAVSEA planning estimates for the work assigned.
  - (d) It provides procurement/requisitioning instructions for material required for alteration accomplishment.

The Authorization Letter is more commonly referred to as the 180-Day Letter, the 240-Day Letter, or the 360-Day Letter.

4. EMERGENT REQUIREMENTS - An emergent requirement is one which arises during the execution year of the FMP. It may involve adding new improvements, or may be related to the authorized improvements already in the FMP. Emergent requirements are added to the current year FMP by compensation within the FMP or by reprogramming.

5. FLEET MODERNIZATION PROGRAM (FMP) - The FMP is the process which installs alterations on U.S. Navy Ships, active and reserve, and provides a funding base for alteration design, planning and support. The FMP is an extensive, fluid program which requires comprehensive management to ensure its proper operation.

6. FLEET MODERNIZATION PROGRAM (FMP) REPORT - The FMP Report is an integrated list which combines approved military, technical and selected type commanders' improvements. These are arranged by individual hull based on scheduled ship overhauls, selected restricted availabilities and related non-hull identified program funding requirements (e.g., design, planning, COSAL, service craft alterations, etc.). The FMP consists of improvements drawn from the AMT in priority order which are applicable to specific ships on a year-by-year basis within a five-year period (some improvements are planned out to eight years). The execution year program of the FMP forms the basis for implementing current

year improvements as funded. The budget year program is the basis for the annual Navy budget submission. Three planning outyears provide a basis for the budgeting for, and procurement of, special program material and allow for planning the accomplishment of ship improvements.

Since there are many more items in an AMT than can be accomplished during any one overhaul period, the improvements are grouped for each scheduled overhaul to display a realistic work package using industrial manpower, scheduled overhaul duration, material procurement lead time, and budgeted dollars as limiting factors. In addition, improvements are not programmed for accomplishment in a specific year if special program material or design plans will not be available to meet the ship availability date. Those items that are programmed for accomplishment in a listed fiscal year are considered programmed SHIPALTs, regardless of the year for which they are listed. All remaining items for that hull are listed separately in the "Unprogrammed" section of the FMP.

The FMP listings provide the repair activities with a preview of the alteration package planned for a hull. Detailed shipyard planning, however, is based on 180-day SHIPALT authorization letters which are written from the FMP. It is this letter, not the FMP, that authorizes the

repair activity to expend funds for the accomplishment of the SHIPALT.

7. MILITARY IMPROVEMENT - A military improvement is one which changes a ship's operational or military characteristics, qualities or features and which increases the ability of the ship to perform its required operational capabilities. When a Proposed Military Improvement (PMI) is approved, it is coordinated with all other programs scheduled for application in naval ships. All approved military alterations for a particular class of ship are arranged in priority order and listed on a Military Improvement Plan (MIP).

8. ORDNANCE IMPROVEMENT PLAN (OIP) - The OIP is a priority listing by ship class/category of all ordnance alterations applicable to the particular ship class/category. Ordnance alterations are collected for display in groups of equipment/system related alterations. Each set is called an Improvement Group.

9. QUICK REACTION CAPABILITY (QRC) AND RAPID DEVELOPMENT CAPABILITY (RDC) REQUIREMENTS - A QRC or RDC requirement is one which requires rapid entry into the MIP/TIP-AMT-FMP process. QRC/RDC requirements in the execution year are staffed as emergent requirements. Budget and outyear requirements are entered into the process by serialized message from CNO to CHNAVMAT directing initiation of the improvement.

10. SHIP ALTERATION (SHIPALT) - Any change in hull, machinery, fittings, or equipment which involves changes in design, material, number, location or relationship of the component parts of an assembly, regardless of whether undertaken separately from, or incidental to, or in conjunction with, repairs. Ship Alteration also install and/or remove shipboard equipment and systems. The SHIPALT document is the formal means by which this work is accomplished. The following SHIPALT Title categories have been assigned:

TITLE D - Assigned to SHIPALTS equivalent to a repair,

- Authorized only by TYCOMs who fund all installation costs associated with its accomplishment except DSA and COSAL.

TITLE F - Assigned to SHIPALTS that can be accomplished by forces afloat and do not require Special Program Material or Centrally Procured Material.

- Authorized only by TYCOMs who fund all costs except DSA and COSAL.

TITLE K - Assigned to SHIPALTS that change the military or technical characteristics of the ship.

- Installations and O&MN material costs are borne by NAVSEA from FMP funds.

- Authorized for accomplishment only by NAVSEA.

TITLE K-P - Assigned to alterations that change the military or technical characteristics of the ship, involve installations of Special Program Material, but are within forces afloat capability for installation.

- Authorized only by NAVSEA.

11. SHIP ALTERATION MANAGEMENT INFORMATION SYSTEM (SAMIS) -

The Ship Alteration Management Information System (SAMIS) is an information system which supports the FMP. (See Appendix D).

12. TECHNICAL IMPROVEMENT - A technical improvement is one which improves the safety of personnel and equipment and/or provides increased reliability, maintainability, and efficiency of installed equipment. All approved technical improvements for a particular class of ship are arranged in priority order and listed on a Technical Improvement Plan (TIP).

APPENDIX C  
INSTRUCTIONS IMPACTING ON  
MP&TS/FMP

APPENDIX C

INSTRUCTIONS IMPACTING ON MP&TS/FMP

There are a great number of Navy instructions concerning the FMP, ILS, and MP&TS, but the majority of these do not directly address the problems under examination by this study. The following instructions do have an impact on this study and the brief narrative on each highlights their salient points.

1. SECNAVINST 4000.29A dated 13 January 1971

This instruction implements DOD Directive 4100.35 and states that it is the policy of the Department of the Navy that logistic support planning will be included in the design, development, test, evaluation, production and operation of systems/equipments at all stages beginning with early conceptual studies. The CNO is tasked to insure that logistic development data such as mission scenarios (time, place, and unit size), availability, maintenance concepts, and manning criteria are incorporated in all operational requirement documents which initiate the development and/or acquisition of weapon systems and equipment. Developments and acquisitions initiated through channels other than formal requirements documents must also include similar logistic development data.

2. OPNAVINST 1500.8H dated 3 July 1975

This instruction established policies and procedures, and assigns responsibilities for planning, programming and implementing actions necessary to provide training support for

systems, subsystem components, and non-hardware oriented developments. The lead time necessary to program for and acquire billets, personnel and training resources, formulate and establish the training program, and train and detail personnel is normally equivalent to the lead time required for the development, procurement, and installation in the Fleet of the new material, technology or managerial process to be supported. Therefore, total training requirements must be incorporated in the planning, programming and budgeting process during the initial hardware development phase and made increasingly definitive as this development progresses. Such planning is required for the development of NTPs to support the ILS requirement, and other planning documents. Concurrently, action must be initiated to define new knowledge and skills which may be required, to make necessary changes in enlisted and officer billet classification, to adjust procedures for personnel administration when necessary, to establish or modify training programs and to change manpower documents.

3. OPNAVINST 4720.2D dated 9 July 1973

This is the principal, governing instruction on the Fleet Modernization Program.<sup>1/</sup> It sets forth planning procedures for the ultimate installation of ship alterations through the FMP. The DCNO (Logistics) (OP-04) is assigned responsibility for the overall direction of Navy ILS efforts. The

<sup>1/</sup> This instruction is currently being updated by OP-436.

Director, Ships Maintenance and Modernization Division (OP-43) is the central point of contact for all matters relating to the administrative management and implementation of the FMP. He is responsible for approval/disapproval action on all proposed military improvements and answers to the Ship Acquisition and Improvement Panel of the CNO Executive Board. The SAIP must be advised of any program deviations requested or required during the FMP execution.

General and specific responsibilities are assigned to other involved Navy organizations. Specific planning procedures for the use of PMI/PTIs and the SAMIS reporting system are also detailed. With regard to the initiation of PMIs, "it is incumbent upon the appropriate SYSCOM, PM, mission and equipment sponsor to ensure that their program is (1) in the MIP or (2) the subject of a PMI. Only in this manner can funding, weight, space, power, moment, manpower, and training requirements be planned and a base for these parameters be maintained."

4. OPNAVINST 5000.42A dated 3 March 1976

This instruction establishes revised R&D planning procedures for the identification of operational requirements, and procedures for conducting management reviews during system acquisition. This instruction applies to all Navy acquisition programs and to other Navy programs not so designated. All stages in the life of a proposed system/equipment are documented and defined from the draft Operational Requirement (OR) through DSARC I.

Of particular interest is the developmental path of a Navy Decision Coordinating Paper (NDCP) (OR to DEVELOPMENT PROPOSAL (DP) to NDCP). The promulgating letter forwarding the OR contains a schedule and special instruction (reliability, maintainability, manpower and software requirements, etc.) pertaining to submittal of the DP. An iterative process should be developed through an informal dialogue between the OPNAV OR sponsor and CHNAVMAT in order to prepare the DP. In the process, CHNAVMAT should consult with Development, Test, and Evaluation activities and COMOPTEVFOR (for Operational, Test, and Evaluation) while preparing the initial draft to ensure adequate scheduling and resource allocation is provided for Test and Evaluation (T&E). In this manner, all questions in relation to the statement of the requirement (OR) and the development of alternatives available to fulfill the requirement (DP) are resolved in the NDCP, including T&E, manpower, personnel and training requirements.

5. OPNAVINST 5300.3A dated 25 September 1975

This instruction establishes policy and assigns responsibility for the determination and programming of manpower requirements associated with new programs, ships, systems, or hardware, and emphasizes the importance of timely action to ensure that such requirements are presented during the annual POM cycle. It applies to the development, review, and programming of officer, enlisted, and civilian manpower requirements

for new programs, ships, systems, hardware, and modifications and/or alterations, regardless of the procurement procedure.

It is the policy of the CNO that manpower and training requirements be developed early in the weapon system selection process and that this information be provided for decision making and manpower programming. The OPNAV sponsor proposing changes in mission, tasks, functions, or the acquisition of new ships, systems, or hardware has the explicit responsibility for ensuring the development of manpower requirements associated with the functional change or new equipment.

The CNO (OP-098) is required to ensure that the review of ORs, Science and Technology Objectives (STOs), DPS, and NDCPs includes the DCN (Manpower) (OP-01).

#### 6. OP-03 Instruction 4700.7

This instruction, issued 13 July 1977 and entitled "Ship Alteration Prioritization Policy for Surface Warfare Ships," delineates prioritization criteria, both horizontally and vertically, for all surface warfare ships to ensure that maximum readiness and orderly modernization are improved to the maximum extent within projected funding envelopes. This is to ensure that cuts made in ship and ordinance alterations during the Fleet Modernization Conference are not made arbitrarily and are made according to the planned goal for each class. Enclosures to the instruction set priorities, by class, for each of four different types of surface ships. They also establish SHIPALT and ORDALT priorities by defining eight

categories of alterations, the first having the highest priority. These categories are as follows:

- a. Mandatory and Safety
- b. Primary Reliability and Maintainability
- c. Urgent Combat/Primary System Modernization
- d. Routine Combat/Primary System Modernization
- e. Priority Secondary Mission Area Modernization
- f. Secondary Reliability and Maintainability
- g. Routine Secondary Mission and Modernization
- h. Other

These categories cut across all other existing categories, such as SHIPALTs/ORDALTs, PMIs/PTIs, etc. Use of these priorities effectively have eliminated all utility of the MIP and TIP. With this prioritization available, it should be possible to more authoritatively assign an AMT priority to each incoming proposed change, thus improving the predictability of outyear planning. If these priorities are adhered to, and if other ongoing efforts (such as those discussed in Section III of this report) are brought to fruition, the reliability of outyear planning will be improved and the accomplishment of all ILS (including MP&TS) planning, budgeting and programming functions will be more assured.

NOTE: Consideration should be given to adopting the above set of priority categories for all ships in the Navy, not just those under OPNAV-03 cognizance.

7. NAVMATINST 4720.1 dated 13 December 1974

This instruction concerns the approval of systems and equipment for service use (ASU). All systems or equipment for which the Navy intends support must be approved for service use prior to commitment to major production. "No new system or significant alteration to an existing system shall be approved for production until it has been adequately tested, proven operationally suitable, and determined to be logistically supportable....Full ASU will not be granted until there is assurance that the equipment operating and maintenance procedures can be carried out effectively by personnel with the level of skill anticipated to be available within the rates and ratings to be assigned these responsibilities."

8. NAVMATINST 5311.2 dated 19 June 1973

This instruction assigns responsibilities for determining certain military personnel and training requirements. The commander, NAVSHIPSYSCOM (now NAVSEASYSCOM) is tasked to provide a Personnel and Training (P&T) analysis organization within his command. Project managers, systems commands, and laboratories are tasked to utilize the capabilities of this P&T analysis organization as the normal and usual method of determining P&T requirement inputs to Navy training plans, ILS plans, manning documents, fleet modernization programs, and related program/requirement documents; budget and plan for this assistance, in accordance with established procedures; and provide funds and technical data in a timely manner.

9. NAVMATINST 5311.3 dated 9 May 1974

This instruction establishes procedures within the Naval Material Command for utilizing the capabilities of PATAO. The provisions of this instruction apply to the determination of all MP&TS requirements for new ships, systems, equipments, and modifications intended for installation aboard ship or ashore. Managers are tasked to request PATAO assistance for new items that may be introduced into the Navy. PATAO will examine the new item and determine analytical requirements, milestones, and costs.

10. Proposed NAVMATINST 4000.XX

NAVMAT-0421 has issued NAVMATINST 4000.XX for review and comment. The subject of the instruction is Weapon Systems ILS Program Review and Appraisal within the NAVMAT command. It establishes ILS program certification procedures, provides for the use of skilled ILS managers, and establishes a Logistic Review Group (LRG). This LRG is responsible for the review of key logistic implications, approaches, planning resources and risks relative to the designated program decision points.

While this instruction does not directly refer to SHIPALTs or to the FMP, it does refer to the acquisition of weapon systems and equipment. The implication of this instruction to the MODMAN Study is the increased emphasis on the control and provisioning of ILS that NAVMAT is attempting to exert on all acquisitions.

11. NAVSEAINST 1543.1 dated 19 August 1975

This instruction is the primary instruction within NAVSEA pertaining to MP&TS. It establishes policy, assigns responsibilities, and provides guidance for planning and providing MP&TS for ships, systems, equipments, and non-hardware oriented technical programs under the cognizance of COMNAVSEASYSCOM.

NAVSEASYSCOM must provide MP&TS for each ship, craft, system, equipment, and non-hardware development it introduces into the Fleet. All planning and programming for new programs, or significant modifications to ongoing programs, must include the resources necessary for analysis prerequisite to determination and development of the MP&TS requirements and for execution of approved plans.

SHAPMs and SLMs control the introduction of items for Fleet operational use through the New Construction, Conversion and Fleet Modernization Programs. NAVSEA has identified SHAPMs and SLMs as "Introducers." The Introducer plans, executes, and tasks others as necessary to ensure that the specified MP&TS is provided for each item that he introduces.

During the planning and development of an item for Fleet introduction, Program Developers "act like" Introducers until one or more Introducers are definitely identified. They then "act for" the Introducer to the extent agreed upon with the Introducer.

12. NAVSEAINST 4105.1 dated 22 July 1977

This instruction establishes policy and assigns responsibilities for ILS planning for ship and system/equipment acquisitions, and modernization and modification programs under the cognizance of NAVSEA. The instruction states that ILS, of which MP&TS is an element, "is a major consideration in the acquisition and deployment of ship/weapons systems. The basic objective of ILS is to assure that accurate and adequate logistic support is delivered to the Fleet in a timely manner at lowest life cycle cost. Development of an ILS program during acquisition/modification activity involves an orderly and thorough planning and implementation process which begins concurrently with initiation of the project itself." The instruction requires that a letter certificate be provided "upon delivery of the first operational production article to the user activity for ship/system/equipment acquisition, except ammunition. This certificate will attest to the fact that ILS has been planned for and acquired. Deficiencies shall be described in the certificate along with a summary statement describing corrective action required." Further, the instruction eliminates the statement in the cancelled NAVSEAINST 4000.5 that tasks SLMs with the responsibility for budgeting and funding ILS for modifications under their cognizance. Instead, SLMs are tasked with ensuring that ILS is provided by others (PMs PDAs, etc.) and that it is properly executed. In

addition, this instruction assigns, to the AM, responsibility and accountability for ILS planning and execution for his programs, including the designation of an ILS manager for each acquisition.

13. NAVSEAINST 4720.3 dated 7 November 1975

This instruction promulgates the NAVSEA policies, procedures and responsibilities for the FMP. It does not directly address MP&TS. However, it does address the flow of the PMI/PTI from inception to fruition, identifies the organizations that are responsible for the different stages of PMI development, and describes how QRC and RDC/Emergent items are to be handled.

14. NAVSEAINST 5311.1 dated 14 July 1977

The recently issued NAVSEAINST 5311.1, dated 14 July 1977, promulgates procedures for the utilization of PATAO for the development of PM&TS related products for the new ships, systems and equipment, and modifications intended for installation on ships or ashore. These MP&TS related products include such things as manpower documents, Navy Training Plans, and inputs to ILS plans. Introducers (SLMs and SHAPMs) and program developers (NAVSEA Project Managers, Ocean Engineering Directorate, Research and Technology Directorate, Fleet Support Directorate, Weapon Systems and Engineering Directorate, and NAVSEC) are requested to task PATAO with the providing of MP&TS products for their systems/equipment, when desired. In

addition, the instruction directs PATAO to review annually all major planning documents (such as STOs, ORs, DCPs, etc.) to identify emerging systems that have MP&TS implications.

15. Proposed Technical Improvements Instruction<sup>2/</sup>

NAVSEA-04K is currently developing an instruction to promulgate procedures for the submittal, processing, and approval of PTIs. It is anticipated that this new instruction will provide necessary guidance for the standardization of technical improvement proposal procedures and a central point of control for all of NAVSEA.

16. NAVELEXINST 4720.3 dated 16 June 1975

This instruction establishes management procedures and responsibilities within NAVELEX for the FMP. A NAVELEX division of PME is designated the alteration sponsor and must accomplish the action required by this instruction prior to submittal of a PMI/PTI for all equipments/systems under his cognizance intended to be included in the FMP. "Starting the PMI/PTI under a SYSCOM infers overall program for system/equipment has been planned to provide for completion of R&D efforts, ILS, ASU, Production, installation (preliminary), and introduction to operating forces. Schedule and budgeting in FYDP are a part of all the foregoing steps leading to the submission of PMI which initiates detailed installation planning. PMIs should be submitted as early as possible, up to about four (4) years before first production unit installations."

<sup>2/</sup> NAVSEA instruction number not yet assigned.

17. Military Active Duty Manpower Programming Procedures

OP-09 has developed these procedures and policies relative to the formulation of the POM manpower program. These procedures support the CNO policy that manpower requirements resulting from proposed changes in missions, tasks, functions, or the introduction of new ships, aircraft, programs, systems, and hardware will be the programming responsibility of the OPNAV sponsor developing said changes.

**APPENDIX D**  
**MANAGEMENT INFORMATION SYSTEMS**

APPENDIX D  
MANAGEMENT INFORMATION SYSTEMS

1. Ship Alteration Management Information System

The FMP is supported by an automated data processing system, known as the Ship Alteration Management Information System (SAMIS), which provides timely information to plan, manage, and execute the FMP. It is an extensive data base which includes information on alterations, overhaul schedules, material requirements, financial data, baseline configuration data, special program material, priority, status and alteration scheduling for all active and Naval Reserve Force Ships. The information is continually modified and updated as the FMP process evolves.

SAMIS produces hard copy reports for the FMP including the MIP, TIP, AMT, and FMP reports. The MIP and TIP are ship type or class documents which list, in priority, all military or technical improvements applicable to the ship type or class. The MIP is the responsibility of OP-436 while the TIP is the responsibility of the SLMs. Priorities for each are determined by the respective organizations. Final priorities are resolved at annual FLTMOD conferences attended by Fleet and TYCOM representatives, SYSCOMS and OPNAV hull, mission and equipment sponsors. The conferences are chaired by CNO (OP-436).

At these conferences, the MIP and TIP for each class are amalgamated to form an AMT for each class. This class document is most important in that it provides:

- A complete priority listing of all improvements applicable to ships of the class.
- Authority for NAVSEA to write ship alterations on the improvements in the order listed.
- Authority to expend planning funds for ship alteration installation studies.
- A priority listing of alterations for CHNAVMAT's use in studying the cumulative effect of these alterations on weight, space, moment, power requirements, safety, and other ship parameters.
- A similar base for CNO (OP-01) to use in manpower planning.
- The base for developing the FMP for individual hulls.

It is important to note that the MIP, TIP and AMT are class documents which list all alterations by priority without regard to material availability or cost. These latter parameters are considered in the structuring of the FMP, which is an individual hull document.

Using the priority listing in the AMT, the CNO (OP-436) prepares individual hull listings of Title K ship alterations and ordnance alterations to formulate the programmed section of the FMP. Type commanders follow an analogous procedure to arrive at a listing of type commander funded alterations for each hull. The items are listed for accomplishment in accordance with the approved ship overhaul schedule. Since there

are many more items in the AMT than can be accomplished at any one overhaul period, the alterations are grouped for each scheduled overhaul to display a realistic work package using industrial manpower, overhaul length, material procurement lead time, and budgeted dollars as limiting factors. These groupings constitute the alteration packages for a ship over a number of industrial availabilities covering a five year period.

It should be noted that the MIP and TIP reporting structure is no longer in general use. SHIPALTs, whether originating as PMIs or PTIs, are usually entered directly into the AMT with a preliminary priority attached. MIP and TIP reports may be run off from SAMIS afterwards if desired.

Once SHIPALTs have been entered into the AMT, they can be extracted on an AMT report (as an unprogrammed ALT) as well as the MIP and TIP reports. This AMT report also lists all of the programmed SHIPALTs that appear in the FMP report. This initial AMT is used by OP-436 when chairing the annual FLTMOD Conference in order to set final priorities on each SHIPALT. After this conference, OP-436 develops the FMP based on budget and material constraints, but adheres to the priorities established by the FLTMOD Conference.

A module of SAMIS, known as the Budget Backup System, is used by OP-436 to determine optimum mixes of those elements constraining the FMP. This system, using a tape from SAMIS as input, generates a CNO Ship Sheet work sheet annotated "for

budget use only." This report is marked up, the changes entered into the system and a new report issued. This process is repeated until the result satisfies OP-436. The final work sheet is then entered into the SAMIS to update the data base. Discrepancies between baseline data from start of work sheet process until end of same are extracted on an exception report and resolved between concerned parties.

The final output of SAMIS has always been the FMP report, a ship by ship, five-year overhaul schedule for all programmed alterations. This report is being supplanted by the "CNO Ship Sheet." which contains essentially the same information as the FMP report. This name change is desirable, as there are at least three definitions of FMP currently in use. FMP refers to the entire "Modernization Program" and all its involved organizations; it refers to the "process" of how improvements are handled within the program; and it refers to the FMP report previously mentioned. This name change should therefore be beneficial in eliminating confusion.

The SAMIS and its various modules do not contain data related to the MP&TS implications of SHIPALTS. They were not intended to do so. The value of SAMIS to MP&TS implication consideration lies with the wide dissemination of its reports to organizations responsible for and/or interested in MP&TS. Interested organizations not now receiving these reports should request them from NAVSEA-04K. When and if recommendation V.E.1.

of this report is implemented and the appropriate instructions revised, a distribution list for the PMI/PTI reports should include organizations such as OP-01, OP-099, NAVSEA-047, and other concerned organizations. This will provide the earliest information possible on proposed improvements in the FMP in order to consider MP&TS implications.

2. Navy Integration Training Resources and Administration

The Navy Integrated Training Resources and Administration System (NITRAS) is under the umbrella of the Naval Training Information System (NAVTIS), which consists of several management information systems related to training, and where appropriate, utilizing common data bases. NITRAS has replaced the Formal Training Data System (FTDS) and the Training Administration System (TRADS). FTDS was an automated information system designed to be responsive to demands for training information prior to the establishment of the Director of Naval Education and Training and the Chief of Naval Education and Training (CNET). Additionally, it provided direct supportive measures for the Chief of Naval Personnel and the Navy Recruiting Command. TRADS was implemented to provide CNET with an automated capability for collecting and displaying statistical information on technical training courses originally obtained via the monthly school report medium. The two systems served useful purposes during their existence. However, they created unnecessary duplication of reporting and neither

completely satisfied the training community's total information requirements. NITRAS combines the most desirable concepts of both systems under the management responsibility of CNET.

### 3. Training Requirements and Planning Subsystems

The Training Requirements and Planning Subsystem (TRAPS) is an information system currently under development which will be an integral part of NAVTIS. Among other things, TRAPS will automate the receipt of enlisted training requirements and the performance of training capacity feasibility studies on these requirements. Annual OPNAV enlisted training requirements for Class "A" and "C" schools (less medical) are transmitted from OP-992 to CNET where they are compared to existing capacities at all locations where the training necessary to produce the desired skill is conducted. Although training requirements are provided for FY+2 (the first planning year) through FY+6, it is generally accepted that the data for outyear planning is not reliable enough for realistic estimating of requirements and has been established only for POM purposes. TRAPS has been designed to perform training capacity feasibility studies only on the training requirements of the first planning year. If the outyear training requirements were estimated on a more realistic basis, TRAPS could be modified to perform feasibility studies on these years as well and, therefore, provide an early indication of the impact on the training community.

#### 4. Catalog of Navy Training Courses

The Catalog of Navy Training Courses (CANTRAC) contains information on schools and all formal courses. The function of CANTRAC is to provide a consolidated, centrally produced, and computerized catalog presenting courses in standardized form. CANTRAC is organized into three volumes. Volume I contains introductory comments, general information on school facilities, and quota control notes. It is published annually in hard copy. Volume II contains course descriptions organized in numerical sequence by Course Identification Number (CIN), while Volume III contains course convening schedules. Volumes II and III are published quarterly on microfiche.

#### 5. Navy Training Plan Management Information

The Navy Training Plan Management Information System (NTPMIS), which is currently being developed for the Plans and Policy Division of OPNAV (OP-099), will provide automated support to the development and execution of NTPs for new systems and equipments and other training requirements under the cognizance of various program sponsors. The system is being designed to process resource requirements identified in each NTP; milestones and action items, with corresponding dates, for each NTP element; required date of introduction into the POM process of each identified resource; summaries of quantities and/or costs by individual or aggregates of NTPs;

and the impact of budget decisions, delays, and other changes during NTP development and execution.

6. Ship Equipment Configuration Accounting System

The Ship Equipment Configuration Accounting System (SECAS) is a data network which collects configuration data and identifies the related logistics support (i.e., technical manuals, spare parts, planned maintenance systems, etc.) for shipboard equipments, including Hull, Mechanical, and Electrical (HM&E); electronics; and ordnance. The ordnance and electronics sections of SECAS are currently in operation and the HM&E section is scheduled for activation 15 September 1977. At the present time, entries into the system for the installation of ordnance on existing ships are made approximately two years prior to installation. For electronics and HM&E, entries are, or will be, triggered by the FMP authorization letters.

7. PMS 383 Management Information System

The PMS 383 Management Information System is an automated logistics data system which directs and monitors ILS, Data Management, and government furnished material functions for PMS 383 ship acquisition programs. The system develops and/or monitors the status of actions required to produce the following:

- Ship Acquisition Planning Milestones
- Contract Schedules

- Contract Data Requirements Lists
- Ship Manpower Documents
- Navy Training Plans
- Crew Scheduling and Phasing Networks
- Supply Readiness Management Plans
- Test Equipment Allowance Lists
- Index of Technical Publications
- Ship Logistic Support Summary
- PMS Status Reports
- SECAS Reports

PMS 383 is the auxiliary, amphibious, and special mission ship acquisition project office. Therefore, this information system addresses only the aforementioned ship types and only the acquisition phase.

APPENDIX E  
ORGANIZATIONS AND PERSONNEL INTERVIEWED

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APPENDIX E

ORGANIZATIONS AND PERSONNEL INTERVIEWED

CDR G. Streeter	OPNAV-321
CAPT A. Osborne	OPNAV-436
CAPT P. Walker	OPNAV-436D
CAPT R. Test	OPNAV-436F
LCDR D. Dwyer	OPNAV-992F1
CDR S. Underhill	OPNAV-992F2
LCDR P. Romanski	PERS-2
Mr. A. Schmidt	SEA-03131
CAPT P. Hughes	SEA-04K
Mr. R. Peterson	SEA-04KB
Mr. R. Perino	SEA-04K3
Mr. I. Wolper	SEA-04K4
Mr. R. Ruppert	SEA-04K42
Mr. F. Conrad	SEA-047D
Mr. R. Grillo	SEA-047C
Mr. R. Allen	SEA-924
Mr. L. Gordon	SEA-934
Mr. E. Fox	SEA-942P
Mr. A. Rabe	PMS-306
Mr. P. Barksdale	PMS-383-12
CAPT D. Rice	AIR-537
Mr. D. McGarrigan	AIR-53711B

Mr. R. Almond	ELEX-5011
Mr. J. Arnold	ELEX-5012
CDR J. O'Lear	CNET-N532
CAPT Gregory	CNET-N31
Mr. J. Ware	CNET-N315
LCDR K. Laughton	CNET-N315

APPENDIX F  
ACRONYM GLOSSARY

APPENDIX F

ACRONYM GLOSSARY

ADS	Alteration Development Support
AIR	Alteration Installation Requirement
AM	Acquisition Manager
AMT	Amalgamated MIP/TIP Report
AOB	Average on Board
ASF	Activity Support File
ASU	Approval for Service Use
BACD	Basic Alteration Class Drawing
CANTRAC	Catalog of Navy Training Courses
CCB	Change Control Board
CEB	CNO Executive Board
C&F	Cost and Feasibility
CFE	Contractor Furnished Equipment
CHNAVMAT	Chief of Naval Material
CIN	Course Identification Number
CIP	Class Improvement Plan
CNM	Chief of Naval Material
CNO	Chief of Naval Operations
COSAL	Consolidated Shipboard Allowance List
CSTAP	CNO Studies and Analysis Program
DCNO	Deputy Chief of Naval Operations
DMSO	Director Major Staff Office

DP	Development Proposal
DSA	Defense Supply Agency
DSA	Design Services Allocation
DSARC	Defense Systems Acquisition Review Council
ECP	Engineering Change Proposal
FLTCINCs	Fleet Commanders-in-Chief
FLTMOD	Fleet Modernization
FMP	Fleet Modernization Program
FTDS	Formal Training Data System
GFE	Government Furnished Equipment
GFM	Government Furnished Material
HARDMAN	Military Manpower versus Hardware Procurement
HM&E	Hull, Mechanical and Electrical
ILS	Integrated Logistics Support
INSURV	Inspection and Survey
LCC	Life Cycle Cost
LRG	Logistic Review Group
MCRF	Master Course Reference File
MDS	Miscellaneous Documentation Support
MILCON	Military Construction
MIP	Military Improvement Plan
MIS	Management Information System
MODMAN	Manpower Implications of the Fleet Modernization Program
MP&TS	Manpower, Personnel and Training Support

NAVTRIS	Naval Training Information System
NDCP	Navy Decision Coordinating Paper
NEC	Navy Enlisted Classification
NES	New Enlisted System
NITRAS	Navy Integrated Training Resources and Administration System
NSA	Naval Supply Activity
NTP	Navy Training Plan
NTPMIS	Navy Training Plan Management Information System
O&MN	Operations and Maintenance, Navy
O&S	Operating and Support Costs
OPN	Other Procurement, Navy
OR	Operational Requirement Document
ORDALT	Ordnance Alteration
P&T	Personnel and Training
PATAO	Personnel and Training Analysis Office
PDA	Principal Developing Activity
PERA	Planning and Engineering for Repair and Alterations
PM	Program Manager
PMI	Proposed Military Improvement
POA&M	Plan of Action and Milestones
POM	Program Objective Memorandum
PTI	Proposed Technical Improvement
QRC	Quick Reaction Capability
RACS	Recruit Allocation Control System

RDC	Rapid Development Capability
RDT&E	Research, Development, Test and Evaluation
RMS	Resources Management System
SAIP	Ship Acquisition and Improvement Panel
SAMIS	Ship Alteration Management Information System
SAP	Ship Alteration Proposal
SECAS	Ship Equipment Configuration Accounting System
SHAPM	Ship Acquisition Project Manager
SHIPALT	Ship Alteration
SLM	Ship Logistic Manager
SMD	Ship Manpower Document
SMF	Student Master File
SMRF	SAMIS Material Requirements Forecast
SSBN	Strategic Submarine Ballistic Missile
SSR	Ships Selected Records
STO	Science and Technology Objectives
T&E	Test and Evaluation
TIP	Technical Improvement Plan
TRADS	Training Administration System
TRAPS	Training Requirements and Planning Subsystem
TSF	Training Summary File
TYCOM	Type Commander
WG	Working Group
WPN	Weapons Procurement, Navy
WSAP	Weapon Systems Acquisition Process

APPENDIX G  
NAVAIR ENGINEERING CHANGE  
PROPOSAL PROCESS

## APPENDIX G

### NAVAIR ENGINEERING CHANGE PROPOSAL PROCESS

This appendix describes the method used by NAVAIR in processing and tracking alterations to systems/equipment within its jurisdiction. NAVAIR utilizes Engineering Change Proposals (ECPs) for the prosecution and documentation of alterations in the configuration of hardware/software or any of its discrete portions (configuration items). A configuration item can vary widely in complexity, size, and type, from an entire aircraft, electronic or mechanical system, to a test meter or round of ammunition. During development and initial production, configuration items are only those specification items that are referenced directly in a contract. During the operation and maintenance period, any repairable item designated for separate procurement is a configuration item.

The steps in processing an engineering change consist of the following:

- Determine need for the change
- Classify the engineering change as Class I or Class II
- Prepare ECP
- Submit ECP to the Change Control Board (CCB)

Secretariat of NAVAIR

- Review ECP
- Approve/disapprove ECP
- Incorporate approved engineering change in the configuration item and in its related data

ECPs can be originated by NAVAIR, contractors, field activities, and fleet commands. In general, Class I engineering changes are those that will achieve at least one of the following benefits.

- Correct deficiencies
- Make a significant effectiveness change in operational or logistics support requirements
- Effect substantial LCC savings
- Prevent slippage in an approved production schedule

Class II engineering changes are those that fall outside the definition of a Class I engineering change. Examples of Class II changes are changes in documentation only or changes in hardware which do not effect Class I criteria.

Prior to requesting a formal ECP, all of the ramifications of the change are considered. Among other things, these include the effect upon personnel training, training equipment and devices, and the availability of appropriate funds. Figure G-1 presents the ECP forms that originators must prepare. The CCB Secretariat receives, records, and distributes Class I ECPs. AIR-05 conducts a preliminary

technical review and evaluation of the merits of the proposal. AIR-04 conducts a preliminary logistics fleet support review.

If the ECP is deemed acceptable by these reviews, a decision memorandum is issued and distributed to all organizations that must act on or prepare the ECP for CCB consideration. PMAs/PCs are responsible for issuing decision memoranda for proposed changes pertaining to their weapon systems. AIR-05 Division Directors are responsible for having decision memoranda issued for proposed changes to GFE and out-of-production items under their cognizance. A decision memorandum announces the decision to process the ECP for approval, schedules a CCB date, and desired production effectivity and/or desired incorporation schedule for retrofit. It also affirms or revises the ECP priority.

Upon receipt of the decision memorandum, all responsible organizations begin detailed evaluation, implementation planning, and preparation of the Change Request Form, implementation schedules, and financial summaries. AIR-04 does a logistics review and AIR-05 does an engineering review, both being a continuation of their preliminary evaluations. When the total impact of the ECP has been determined, a CCB Change Request is prepared by the cognizant engineer or the AIR-05 project officer (See Figure G-2). The Change Request is then forwarded to affected codes where

effects on weight, balance, performance guarantees, ground support equipment, computer programs, ship compatibility, human factors, reliability, maintainability, value engineering, and nuclear safety are evaluated and noted on the request. When complete, the Change Request is forwarded to the AIR-05 project officer where any inconsistencies will be resolved and cost information summarized. The complete package is then forwarded to the appropriate authority for signature and then to the PMA/PC for final review. The Change Request is then delivered to the CCB, which considers each ECP as scheduled by the decision memorandum. If the ECP is approved, the action codes designated in the implementation schedule then proceed with the implementation in accordance with the approved schedule.

The foregoing demonstrates that NAVAIR has very tight control over alterations. This tight control is illustrated by the one point of contact for all incoming proposed changes, reviews and evaluations of proposed changes, the methods by which the Change Control Board operates and approves all changes, and the final methods of implementation. While there are tremendous differences in magnitude between alterations to ships and alterations to aircraft and support systems, there is still something to be learned from the methods used to modify equipment. MID-STD-480 and ECPs are also used by engineering managers in the development of such changes as ORDALTs, field changes, etc.

DOD-STD-480A  
12 April 1978

ENGINEERING CHANGE PROPOSAL, PAGE 1  
(SEE MIL-STD-480 FOR INSTRUCTIONS)

DATE PREPARED

PROCURING ACTIVITY NO.

1. ORIGINATOR NAME AND ADDRESS		2. CLASS OF ECP	3. JUST CODE	4. PRIORITY
5. ECP DESIGNATION a. MODEL/TYPE    b. MFR. CODE    c. SYS. DESIGN    d. ECP NO.    e. TYPE    f. REV.    g. CORR.		6. BASELINE AFFECTED <input type="checkbox"/> FUNCTIONAL <input type="checkbox"/> ALLOCATED <input type="checkbox"/> PRODUCT 7. OTHER SYS /CONFIG. ITEMS AFFECTED <input type="checkbox"/> YES <input type="checkbox"/> NO		
8. SPECIFICATIONS AFFECTED - TEST PLAN a. SYSTEM    b. ITEM    c. TEST PLAN		9. DRAWINGS AFFECTED MFR. CODE    NUMBER    REV.    NOR NO.		
10. TITLE OF CHANGE		11. CONTRACT NO. & LINE ITEM		
12. CONFIGURATION ITEM NOMENCLATURE		13. IN PRODUCTION <input type="checkbox"/> YES <input type="checkbox"/> NO		
14. NAME OF PART OR LOWEST ASSEMBLY AFFECTED		15. PART NO. OR TYPE DESIGNATION		
16. DESCRIPTION OF CHANGE				
17. NEED FOR CHANGE				
18. PRODUCTION EFFECTIVITY BY SERIAL NUMBER		19. EFFECT ON PRODUCTION DELIVERY SCHEDULE		
20. RETROFIT				
a. RECOMMENDED ITEM EFFECTIVITY		c. SHIP/VEHICLE CLASS AFFECTED		
b. ESTIMATED KIT DELIVERY SCHEDULE		d. LOCATIONS OR SHIP/VEHICLE NUMBERS AFFECTED		
21. ESTIMATED COSTS/SAVINGS UNDER CONTRACT		22. ESTIMATED NET TOTAL COSTS		
23. SUBMITTING ACTIVITY AUTHORIZING SIGNATURE		TITLE		
24. APPROVAL DISAPPROVAL				
a. CLASS I <input type="checkbox"/> APPROVAL RECOMMENDED		b. CLASS II <input type="checkbox"/> APPROVED <input type="checkbox"/> DISAPPROVED <input type="checkbox"/> CONCURRENCE IN CLASSIFICATION OF CHANGE c. GOVERNMENT ACTIVITY		
		d. DO NOT CONCURRENCE IN CLASSIFICATION OF CHANGE SIGNATURE    DATE		

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Figure G-1

G-5

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documentation available, the training did

DOD-STD-480A  
12 April 1978

ENGINEERING CHANGE PROPOSAL, PAGE 2  
(SEE MIL-STD-480 FOR INSTRUCTIONS)

PROCURING ACTIVITY NO.

ORIGINATOR NAME AND ADDRESS

ECN NUMBER

25. OTHER SYSTEMS AFFECTED

EFFECTS ON FUNCTIONAL ALLOCATED CONFIGURATION IDENTIFICATION

27. CONFIGURATION ITEMS AFFECTED

26. OTHER CONTRACTORS/ACTIVITIES AFFECTED

28. EFFECTS ON PERFORMANCE ALLOCATIONS AND INTERFAACES IN SYSTEM SPECIFICATIONS

29. EFFECTS ON EMPLOYMENT, INTEGRATED LOGISTIC SUPPORT, TRAINING, OPERATIONAL EFFECTIVENESS, ETC.

30. EFFECTS ON CONFIGURATION ITEM SPECIFICATIONS

31. DEVELOPMENTAL REQUIREMENTS AND STATUS

32. TRADE OFFS AND ALTERNATIVE SOLUTIONS

33. DATE BY WHICH CONTRACTUAL AUTHORITY IS NEEDED

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Figure G-1 (Continued)

G-6

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12 April 1978

ENGINEERING CHANGE PROPOSAL, PAGE 3  
(SEE MIL-STD-480 FOR INSTRUCTIONS)

PRODUCING ACTIVITY NO.

ORIGINATOR NAME AND ADDRESS

ECF NUMBER

EFFECTS ON PRODUCT CONFIGURATION IDENTIFICATION		OPERATION AND LOGISTICS	
ECF	FACTOR	ECF	FACTOR
34	EFFECT ON PRODUCT CONFIGURATION IDENTIFICATION OR CONTRACT PERFORMANCE	35	EFFECT ON OPERATIONAL EQUIPMENT
	WEIGHT/BALANCE/STABILITY (CALCULATED)		SAFETY
	WEIGHT/MOMENT (OTHER EQUIPMENT)		SURVIVABILITY
	DRAWINGS		RELIABILITY
	NOMENCLATURE		MAINTAINABILITY
			SERVICE LIFE
36	EFFECT ON INTEGRATED LOGISTIC SUPPORT (ILS) ELEMENTS		OPERATING PROCEDURES
	ILS PLANS		ELECTROMAGNETIC INTERFERENCE
	MAINTENANCE CONCEPT AND PLANS		ACTIVATION SCHEDULE
	MAINTENANCE PROCEDURES		OPERATING INSTALLATIONS
	INTERIM SUPPORT PROGRAM		
	SPARES AND REPAIR PARTS		
	TECH. MANUALS/PROGRAMMING TAPES	37	OTHER CONSIDERATIONS
	FACILITIES		INTERFACES
	SUPPORT EQUIPMENT		OTHER AFFECTED EQUIPMENT/ITEM
	OPERATOR TRAINING		PHYSICAL CONSTRAINT
	OPERATOR TRAINING EQUIPMENT		OPERATIONAL COMPUTER PROGRAMS
	MAINTENANCE TRAINING		RECORDS OF OTHER EQUIPMENT
	MAINTENANCE TRAINING EQUIPMENT		SYSTEM TEST PROCEDURES
	PERSONNEL		
	CONTRACT ENGINEERING TECH. SAYS		
	VERIFICATION AND DEMONSTRATION PLANS		
38	ALTERNATIVE SOLUTIONS		

39 DEVELOPMENTAL STATUS

40 RECOMMENDATIONS FOR RETROFIT

41	MAN HOURS PER UNIT TO INSTALL RETROFIT KITS	42	MAN HOURS TO CONDUCT SYSTEM TESTS AFTER RETROFIT
A	ORGANIZATION	B	INTERMEDIATE
C	DEPOT	D	OTHER
43 THIS CHANGE MUST BE ACCOMPLISHED			44 DATE CONTRACTUAL SERVICE END
<input type="checkbox"/> BEFORE <input type="checkbox"/> WITH <input type="checkbox"/> AFTER THE FOLLOWING CHANGES			45 OUT OF SERVICE TIME
			<input type="checkbox"/> YES <input type="checkbox"/> NO
46 EFFECT OF THIS ECF AND PREVIOUSLY APPROVED ECF'S ON ILS			47 DATE CONTRACTUAL AUTHORITY NEEDED FOR
			PRODUCTION
			ILS

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Figure G-1 (Continued)

G-7

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DOD-STD-480A  
12 April 1978

ENGINEERING CHANGE PROPOSAL, PAGE 4 (NFSR MIL-STD-480 FORM INSTRUCTIONS)		PROPOSING ACTIVITY NO.				
ORIGINATOR NAME AND ADDRESS		U.P. NUMBER				
48 ESTIMATED NET TOTAL COST IMPACT (USE MINUS SIGN FOR SAVINGS)						
FACTOR	COSTS/SAVINGS UNDER CONTRACT					OTHER COSTS/SAVINGS TO GOVERNMENT
	NON-RECURRING	RECURRING			TOTAL	
UNIT	QUANTITY	TOTAL (IN MILLIONS)	(1)	(2)		
A. PRODUCTION COSTS SAVINGS						
CONFIGURATION ITEM						
FACTORY TEST EQUIPMENT						
SPECIAL FACTORY TOOLING						
SCRAP						
ENGINEERING, ENGR, DATA REV						
REVISION OF TEST PROCEDURES						
QUALIFICATION OF NEW ITEMS						
SUBTOTAL OF PROD. COSTS SAVINGS						
B. RETROFIT COSTS						
ENGINEERING, ENGR, DATA REV						
PROTOTYPE TESTING						
KIT PROOF TESTING						
RETROFIT KITS						
PREP. OF MOBILIZATION/SET UP INSTR						
SPECIAL TOOLING FOR RETROFIT						
CONTRACTOR FIELD SERVICE ENGR						
QDTC PERSONNEL INSTALLATION						
TESTING AFTER RETROFIT						
MODIFICATION OF USE						
QUALIFICATION OF MODIFIED USE						
SUBTOTAL OF RETROFIT COSTS						
C. INTEGRATED LOGISTIC SUPPORT COSTS/SAVINGS						
SPARES/REPAIRS PARTS REWORK						
NEW SPARES AND REPAIRS PARTS						
RETROFIT KITS FOR SPARES						
OPERATOR TRAIN COURSES						
MAINTENANCE TRAIN COURSES						
REV. OF TECH. MAN. PROGRAMMING TAPES						
NEW TECH. MAN. PROGRAMMING TAPES						
PREP. OF MOBILIZATION/SET UP INSTR						
INTERIM SUPPORT						
MAINTENANCE MANPOWER						
SUBTOTAL OF ILS COSTS/SAVINGS						
D. OTHER COSTS/SAVINGS						
E. SUBTOTAL COSTS/SAVINGS						
SUBTOTAL UNDER CONTRACT						
F. COORDINATION CHANGES BY OTHER CONTRACTORS						
G. COORDINATION CHANGES BY GOVERNMENT						
ESTIMATED NET TOTAL COSTS/SAVINGS						

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Figure G-1 (Continued)

G-8

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12 April 1978

ENGINEERING CHANGE PROPOSAL, PAGE 5  
(SEE MIL-STD-180 FOR INSTRUCTIONS)

PRODUCING ACTIVITY NO.

ORIGINATOR NAME AND ADDRESS	ECP NUMBER			
49. ESTIMATED COSTS/SAVINGS SUMMARY: RELATED ECP'S (ELSE MINUS SIGN FOR SAVINGS)	MANUFACTURER'S CODE (1)	ECP NUMBER (2)	COSTS/SAVINGS UNDER CONTRACTS (3)	OTHER COSTS/SAVINGS TO GOVERNMENT (4)
50. PRODUCTION COSTS/SAVINGS (Subtotal of Costs/Savings Elements from block 48 applicable to aircraft, ship, tank, vehicle, missile or its subsystem)				
SUB-TOTAL PRODUCTION COSTS/SAVINGS				
51. RETROFIT COSTS (Applicable to aircraft, ship, tank, vehicle, missile or its subsystem)				
SUB-TOTAL RETROFIT COSTS				
52. INTEGRATED LOGISTIC SUPPORT COSTS/SAVINGS				
53. REVISED REQUIREMENTS				
54. 1. ILS RETROFIT (If not covered under 53) (Applicable to aircraft, ship, tank, vehicle, missile or its subsystem)				
55. 2. ILS SUBTOTAL (Applicable to aircraft, ship, tank, vehicle, missile or its subsystem)				
56. 3. OPERATOR TRAINER (Net total cost/saving from each ECP covering operator trainer)				
57. 4. MAINTENANCE TRAINER (Net total cost/saving from each ECP covering maintenance trainer)				
58. 5. OTHER TRAINING EQUIPMENT				
59. 6. SUPPORT EQUIPMENT (Net total cost/saving from each ECP on support equipment)				
60. 7. ILS PLANS				
61. 8. MAINTENANCE CONCEPT, PLANS, SYSTEM DOCUMENTS				
62. 9. INTERIM SUPPORT PLAN				
63. NEW REQUIREMENTS	NON-RECURRING COSTS	RECURRING COSTS		
64. 10. PROVISIONING DOCUMENTATION		UNIT	QTY	TOTAL
65. 11. OPER. TRAINING DEVICES/EQUIP				
66. 12. MANUALS/PROGRAMMING TAPES, SPARES, REPAIR PARTS (For 13)				
67. 13. MAINTENANCE TRAINING DEVICES/EQUIPMENT				
68. 14. MANUALS/PROGRAMMING TAPES, SPARES, REPAIR PARTS (For 13)				
69. 15. SUPPORT EQUIPMENT				
70. 16. MANUALS/PROGRAMMING TAPES (For 15)				
71. 17. PROV. DOCUMENTATION (For 15)				
72. 18. REPAIR PARTS (For 15)				
SUB-TOTAL ILS COSTS/SAVINGS (Sum of c. 1 through c. 18)				
73. 4. OTHER COSTS/SAVINGS (Total free block add of related ECP's)	MANUFACTURER'S CODE	ECP NUMBER		
TOTAL OTHER COSTS/SAVINGS				
SUB-TOTALS OF COLUMNS				
SUB-TOTAL UNDER CONTRACT				
5. ESTIMATED NET TOTAL COSTS/SAVINGS (a + b + c + d)				

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D-11088

Figure G-1 (Continued)

1813 PAGE 1  
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1813 PAGE 2  
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CCB CHANGE REQUEST/DIRECTIVE  
NAVAIR FORM 13050-2 (Rev. 12-77)

SEE EXHIBIT 106, NAVINST 4100.1

CLASSIFICATION

1. PROCESSING RATE  
 HAND  PMI  
 CARRY  DUTY  NORMAL

2. CONTRACTOR/NAVAL ACTIVITY	3. ECP NAME/C DEVIAION/WAIVER NO	4. CCB NUMBER
5. SUBJECT OF CHANGE AND CLASSIFICATION OF SUBJECT (Indicate if Change Affects Current Classification)		
6. USIP NO		
7. ORIGINATOR	8. CODE	9. EXTENSION
10. DATE PREPARED		
11. NATURE OF CHANGE (Refer to Conversion Definitions, 2 & 4 in 1)		
12. REFERENCES		

13. CONTRACT NUMBERS (Ref. 106, NAVINST 4100.1)	14. ARTICLES AFFECTED Type: Model Series: Item No. Item Name	15. QUANTITIES OF ARTICLES TOTAL ON CONTRACT PRODUCTION RETROFIT	23. MANDATORY CONSIDERATIONS NO YES ACTION REQUIRED
			a. GFE Affected (See NAVAIRINST 4340.2) Attach Revised MGREL and NAV AIR Form 13050-2A and/or 2B
			b. Support Equipment Affected Coordinate each ECP with AIR 5311. Attach NAV AIR Form 13050-2C
			c. Computer Program Affected If Yes, Coordinate with AIR 533.534
			d. Human Factors Affected If Yes, Coordinate with AIR 5313
			e. Item Approved for Service Use If No, Coordinate with AIR 1012
16. PRODUCTION EFFECTIVITY (Refer to Conversion Block)			24. WEIGHT AND PERFORMANCE GUARANTEES AFFECTED REQUEST FIRM QUOTE WEIGHT EMPTY PERFORMANCE
ESTIMATED FIRM			YES <input type="checkbox"/> NO <input type="checkbox"/>
17. STATUS OF CHANGE NOT STARTED <input type="checkbox"/> STARTED <input type="checkbox"/> COMPLETED <input type="checkbox"/>			USEFUL LOAD
18. RETROFIT INSTALLATION			25. COST SAVINGS HARD SAVINGS NO <input type="checkbox"/> \$ <input type="checkbox"/> INTANGIBLE
19. TECHNICAL DIRECTIVE CATEGORY MAINT LEVEL: UNIT/MHS <input type="checkbox"/> IMMED <input type="checkbox"/> URGENT <input type="checkbox"/> ROUTINE <input type="checkbox"/> RECORD			26. INTERFACE (Identify Other Systems/Equipment that must be changed)
20. TYPE & NO. OF TECHNICAL DIRECTIVE (Indicate if changed from AIR 4101 after CCB Approval)			
AFC <input type="checkbox"/> AVC <input type="checkbox"/> OTHER (Specify) <input type="checkbox"/>			
NO <input type="checkbox"/> NO <input type="checkbox"/> NO <input type="checkbox"/>			
22. AVAILABILITY LEAD TIME (Start)			
23. MONTHS AFTER AUTHORIZATION TO PROCEED			
24. AUTHENTICATION (Initials, Name, Signature, Title, Date, LRS, AFM, Knowledgeable and Approval by Change Control)			

25. ORDERING INSTRUCTIONS FOR CONTRACTOR NAF/NAFR, ASO OR OTHER ACTIVITY (Indicate What and Who Makes)

26. PROPOSED ACTION (Check under Letter and Complete Block)									
A. AMEND	DETAIL <input type="checkbox"/> MGREL <input type="checkbox"/> MIL SPEC <input type="checkbox"/> DWG <input type="checkbox"/>	D. PROVIDE <input type="checkbox"/> TURN AROUND PROGRAM <input type="checkbox"/> INSTALL <input type="checkbox"/> KITS FOR AC DEPTED ARTICLES/ SPARES							
B. PREPARE	SUBMIT DETAILED ENGINEERING DATA FOR APPROVAL BY FIELD <input type="checkbox"/> NAVAIR HQ <input type="checkbox"/>	1. QUANTITY OF ARTICLES IN WARRANTY BY TIME, LESS QUANTITY CHANGED IN PRODUCTION							
C. CONDUCT	MOCK UP <input type="checkbox"/> PROTOTYPE IN BAILED/ UP <input type="checkbox"/> GOVT FURNISHED ARTICLE PROTOTYPE <input type="checkbox"/> OR INSPECTION BY IN PRODUCTION ARTICLE <input type="checkbox"/>	2. QUANTITY OF ARTICLES OUT OF WARRANTY BY TIME, LESS ATTRITION							
E. INCORPORATE IN PRODUCTION	GROUND TEST <input type="checkbox"/> FLIGHT TEST <input type="checkbox"/>	3. MAINT TRAINERS <input type="checkbox"/> USN <input type="checkbox"/> FMS IN-OP TRAINERS <input type="checkbox"/> USN <input type="checkbox"/> FMS							
F. TECHNICAL DIRECTIVE TO BE PREPARED BY	NAFR <input type="checkbox"/> CONTRACTOR <input type="checkbox"/> NAVAIR <input type="checkbox"/>	4. CLASSIFICATION							

PREVIOUS ISSUES OF THIS FORM ARE OBSOLETE

Figure G-2

G-11

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20 PRICE INFORMATION AND FUNDING SOURCES (Prices quoted good until

ACT KEY	ITEM	PRICE INFORMATION AND FUNDING SOURCES (Type code per line)		TOTAL	FUND REQUESTED AND AVAILABLE (Enter Line & Long for L&L items)	
		PRODUCTION	RETROFIT		PRODUCTION	RETROFIT
A	Eng. Design Dev & Test					
B	Drawings					
C	Tech. Directive					
D	Tech. Directive Verification					
E	Tech. Directive Print and Dist.					
F	Supply Data					
G	Kits for Basic Equip.					
H	Contract-NARF Mod. of Kits					
I	Training					
J	Trainers					
K	Kits for Mod. of Spares					
L	Contractor-NARF Mod. of Spares					
M	New Spares					
N	Repair Parts					
O	Publications					
P	Publications Print and Dist.					
Q	ILS/MAINT Plan					
R	Interim Support					
S	Ground Support Equipment					
T	Gov't Furnished Equipment					
U						
V						
W						

CODE 31 CONCURRENCES (Signature)

32 CCB MEMBERS

33. APPROVED DISMISSED

DESIGN OFFICER/ENGINEER	MATERIAL ACQUISITION (AIR-08)
AIRCRAFT/WEAPON SYSTEM DIRECTOR	MATERIAL ACQUISITION (ESA-20)
SUPPORT EQUIPMENT OFFICER	LOGISTICS/FLEET SUPPORT (AIR-08)
INTEGRATED LOGISTICS SUPPORT MANAGER	PROJECT MANAGER/COORDINATOR
AIR-08 CCB REPRESENTATIVE	CCB CHAIRMAN (AIR-01)

045

#### 34. IMPLEMENTING ACTIONS

IMPLEMENTING ACTIONS				
ACTION	ACTION KEY(S)	ACTION CODE	ACTION REVD /NULL DATE	OTHER INFORMATION
Change Order				
Order for Correction of Defect				
Call Letter				
Technical Directive				
AIR	Ltr to			
AIR	Ltr to			
Procurement Request				
Military Interdepartmental Purchase Request				
Master Government Furnished Equipment Ltr Change				
AIR/TASK Project Order				
Requisition/Adjustment				

### COST AND FUNDING SUMMARY

☐ ATTRITION ☐ PRODUCTION ☐ RETROFIT		ECP/NAMEC No. _____ ECP/NAMEC Originator _____ ECP/NAMEC Sponsoring _____		Logistics Manager _____ Equipment _____ OSIP No. _____		CLB No. _____ TD No. _____ TO Category _____							
ELEMENT	LEAD TIME MANHOURS	CITY BY FY	TASKED ACTIVITY	IMPLEMENTATION ACTIVITY (NAVAIR CODE)	TYPE FUNDING	1ST YEAR (FY COST	FUNDING COST	2ND YEAR (FY COST	FUNDING COST	3RD YEAR (FY COST	FUNDING COST	FUNDING COST	FUNDING COST
						FUNDING SIGN OFF	FUNDING SIGN OFF	FUNDING SIGN OFF	FUNDING SIGN OFF	FUNDING SIGN OFF			
1. RETROFIT - NON RECURRING													
a. TECH DIR PREP													
b. TECH DIR VERIFICATION													
c. TECH DIR PRINT & DISTR													
d. DRAWINGS													
e. SUPPLY DATA													
f. TOOLS/NGS													
2. RETROFIT - RECURRING													
a. TOOL KITS													
b. KITS FOR BASIC EQUIPMENT													
c. MOU OF BASIC EQUIPMENT													
3. GFE													
a. LOGISTICS SUPPORT													
b. TRAINING													
c. KITS FOR NAME													
d. MOU OF NAME													
e. KITS FOR MOTS/OTS													
f. MOU OF MOTS/OTS													
g. KITS FOR SPARES													
h. NEW SPARES													
i. REPAIR PARTS													
j. TECH MANUALS/PREP													
k. DOCUMENTATION REPRO & DISTR													
l. MAINTENANCE PLAN													
m. INTERIM SUPPORT													
n. SUPPORT EQUIPMENT													
o. SUPPORT EQUIPMENT SPARES & REPAIR PARTS													
p. NEW START DATA PKGS - DEPOT INTERSERVICING													
PREPARED BY	CODE	TELEPHONE NO.	DATE	APPROVED BY	CODE	DATE	APPROVED BY	CODE	DATE	APPROVED BY	CODE	DATE	

G-13      Figure G-2 (Continued)

NAVAIR FORM 130514 (REV. 9/78)

Previous issue of form from 1st change

### MILESTONE CHART

ELEMENT	CITY BY FY	TASKED ACTIVITY	FY CY	CY	FY CY												FY CY											
					O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	
1. PROCUREMENT																												
a. CCB APPROVED																												
b. CHANGE IMPLEMENTED																												
2. PROD INCORP (FIRST ARTICLE DELIVERED)																												
3. RETROFIT																												
a. PRELIMINARY TD DISTRIBUTED																												
b. PRINTED TD DISTRIBUTED																												
4. GFE DELIVERY SCHEDULE																												
5. LOGISTICS SUPPORT																												
a. TRAINING SCHEDULE																												
b. MAINT KIT DELIVERY SCHEDULE																												
c. MAINT MODIFICATION SCHEDULE																												
d. MTO/T MODIFICATION SCHEDULE																												
e. SPARES KIT DELIVERY SCHEDULE																												
f. SPARES MODIFICATION SCHEDULE																												
g. NEW SPARES DELIVERED																												
h. REPAIR PARTS DELIVERED																												
i. TECH MANUALS DELIVERED																												
j. INTERNS SUPPORT SCHEDULE																												
k. SUPPORT EQUIPMENT																												
l. SUPPORT DATA DELIVERED																												
m. SPARES DATA DELIVERED																												
n. NEW START DATA DELIVERED																												
o. NEW START DATA INTERSERVICE DELIVERY																												

G-14

Figure C-2 (Continued)

REMARKS

NAVAIR FORM 138015 (REV 9-78)

Previous pages of this form are attached.

APPENDIX H  
STATISTICAL ANALYSES

APPENDIX H  
STATISTICAL ANALYSES

The MODMAN Study revealed a great amount of data concerning ship alterations and overhauls, as well as data concerning management information systems related to SHIPALT schedules and required material. Data regarding ILS functions within the FMP, on the other hand, are relatively scarce, and data concerning the identification of MP&TS implications are practically non-existent. In order to perform a data analysis that would be significant to the Study, documentation on the origination of proposed improvements for FY-76 was collected.

1. PMI Analysis

Data on Proposed Military Improvements were relatively easy to collect since PMIs are forwarded to one central point (OPNAV-436). When approved for a C&F study by OPNAV-436, PMIs are then sent to NAVSEA-04K. This organization maintains records of all incoming PMIs until they become SHIPALTs, at which time the SHIPALT number is recorded by SAMIS. A list of all PMIs submitted to NAVSEA-04K during FY-76 was obtained for analysis.

The analysis demonstrated (see Table H-1) that 8% of the PMIs indicated both manpower and training implications and 31% indicated training implications only. The PMIs indicating training only can be attributed to a requirement for on-the-job training for familiarization purposes. From the

TABLE H-1  
PROPOSED MILITARY IMPROVEMENTS (PMI) FOR FY-76

PMI NO.	ORIGINATING ORGANIZATION	SPONSORING ORGANIZATION	MANPOWER IMPLICATIONS	TRAINING IMPLICATIONS	DEVELOPED FOR FMP ONLY
1-76	CANCELLED		NO	NO	--
2-76	NAVELEX	OP-009Q	NO	NO	YES
3-76	CANCELLED		--	--	--
4-76	NAVSEA	OP-221E	NO	YES	YES
5-76	--	--	NO	NO	YES
6-76	CANCELLED*		NO	NO	YES
7-76	NAVELEX	OP-009Q	NO	YES	--
8-76	OP-372F	OP-35	NO	NO	YES
9-76	NAVSEA		NO	NO	YES
10-76		OP-944	NO	NO	YES
11-76	NAVELEX (PME 107-4)	OP-009Q	NO	YES	YES
12-76	CINCPACFLT	OP-03	NO	NO	YES
13-76	NAVSEC	OP-945	NO	YES	YES
14-76	NAVSEC	OP-945	NO	NO	YES
15-76	NAVSEC	OP-945	NO	NO	YES
16-76	NAVSEA	OP-945	NO	NO	YES
17-76	NAVSEC	OP-945	NO	NO	YES
18-76	NAVELEX	OP-351	NO	NO	YES
19-76	NAVSEA	--	NO	NO	YES
20-76	NAVSEA	OP-341	NO	YES	YES
21-76	NAVSEA	--	NO	NO	YES
22-76	PMS 404-5D	OP-35	YES	YES	YES
23-76	NAVSEA	--	NO	NO	YES
24-76	CANCELLED		NO	NO	--
25-76	PMA-266	OP-225	NO	YES	YES
26-76	PMA-266	OP-32H2	NO	YES	NO
27-76	PMA-266	OP-506 03	NO	YES	NO
28-76	CANCELLED		NO	YES	NO
29-76	CANCELLED		--	--	YES
30-76	CANCELLED		--	--	NO
31-76	CANCELLED		--	--	NO

TABLE H-1 (Continued)  
PROPOSED MILITARY IMPROVEMENTS (PMI) FOR FY-76

PMI NO.	ORIGINATING ORGANIZATION	SPONSORING ORGANIZATION	MANPOWER IMPLICATIONS	TRAINING IMPLICATIONS	DEVELOPED FOR FMP ONLY
32-76	NAVSEA	OP-35	YES	YES	NO
33-76	NAVSEA	--	--	--	YES
34-76	--	--	--	--	YES

documentation available, the training did not appear to involve new Navy Enlisted Classifications, new formal schooling, or require formal retraining of operating or maintenance personnel. Those PMIs indicating both manpower and training implications included two major improvements, both of which had received high visibility and had Navy Training Plans.

Other PMI statistics of interest include a PMI cancellation rate of 24% and the fact that 80% of all the FY-76 PMIs were originated strictly for the FMP and were not the result of R&D efforts directed towards new construction only.

## 2. SHIPALT Analysis

Obtaining similar data for Proposed Technical Improvements for a similar period of time was not possible. PTIs do not have a standard submittal form nor are they all forwarded to a central organization. They are usually sent to the SLMs via letter format, or are originated by the SLM as a result of INSURV Reports, CASREPTS, etc. However, the SLMs do not usually maintain a log on incoming letters that request changes. It was, therefore, impossible to locate and isolate all FY-76 PTIs as was done for PMIs. Instead, all SHIPALTS signed during FY-76 were isolated. Each SLM maintains a SHIPALT log which summarizes various information, including the date it was signed off. Additionally, each signed SHIPALT is entered into the SAMIS and subsequently printed out on the AMT report. The SLM logs and a copy of the

AMT for all SHIPALTs entered in FY-76 were obtained and a selected sample list made of the SHIPALTs. The data set included three classes of surface ships: CG-16, DDG-2, and FF-1052 (see Table H-2). Based on this sample for FY-76, 22% were "K" ALTS, 70% were "D" ALTS, and 28% were "F" ALTS. Only 3% of the total had an indication of manpower and/or training implications; these were all "K" ALTS.

### 3. General

Several facts should be noted regarding the analyses of the PMI and SHIPALT data sets. First, the MP&TS implications, as indicated on the PMI forms, are not necessarily valid (the qualifications of the people making the assessments and the level of information available at the time of assessment are not known). Second, there is no direct tracking from the PMI to SHIPALTs so there is no definite way of tracking the MP&TS implications all the way to ship installation. Third, the FY-76 SHIPALT data set contains both PMIs and PTIs, but, because of the time lag between PMI submission and SHIPALT recording, the PMI data set and the SHIPALT data set are not comparable. Fourth, of the 3% of the SHIPALT data set that had MP&TS indications, 2% were major alterations (such as NAVMACS A PLUS) which had their MP&TS implications considered and the other 1% did not appear to have MP&TS indications of any consequence.

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FROM COMINT SOURCETABLE H-2  
SIGNED SHIPALTS FOR FY 76

SHIP ALT NO.	SHIP CLASS	TYPE OF ALT	MANPOWER AND/OR TRAINING IMPLICATION	MIP	TIP	REMARKS
201	FF 1052	K	NO	NO	YES	
219	FF 1052	D	NO	NO	YES	
237	FF 1052	D	NO	NO	YES	
244	FF 1052	K	YES	YES	NO	
246	FF 1052	D	NO	NO	YES	
247	FF 1052	D	NO	NO	YES	
260	FF 1052	K	NO	NO	YES	
286	FF 1052	D	NO	NO	YES	
308	FF 1052	F	NO	NO	YES	
326	FF 1052	D	NO	YES	NO	
328	FF 1052	K	NO	NO	YES	
342	FF 1052	D	NO	NO	YES	
363	FF 1052	D	NO	NO	YES	
383	FF 1052	K	NO	YES	NO	
388	FF 1052	K	NO	YES	NO	
390	FF 1052	D	NO	NO	YES	
394	FF 1052	K	NO	NO	YES	
396	FF 1052	D	NO	NO	YES	
397	FF 1052	D	NO	NO	YES	
400	FF 1052	D	NO	NO	YES	
402	FF 1052	D	NO	NO	YES	
403	FF 1052	D	NO	NO	YES	
404	FF 1052	D	NO	NO	YES	
408	FF 1052	D	NO	NO	YES	
409	FF 1052	D	NO	NO	YES	
410	FF 1052	D	NO	NO	YES	
411	FF 1052	K	NO	YES	NO	
412	FF 1052	D	NO	YES	NO	
413	FF 1052	D	NO	NO	YES	
414	FF 1052	D	NO	NO	YES	
415	FF 1052	D	NO	NO	YES	
416	FF 1052	F	NO	NO	YES	

TABLE H-2 (Continued)  
SIGNED SHIPALTS FOR FY 76

SHIP ALT NO.	SHIP CLASS	TYPE OF ALT	MANPOWER AND/OR TRAINING IMPLICATION	MIP	TIP	REMARKS
417	FF 1052	D	NO	NO	YES	
418	FF 1052	D	NO	NO	YES	
419	FF 1052	D	NO	NO	YES	
420	FF 1052	D	NO	NO	YES	
421	FF 1052	D	NO	NO	YES	
422	FF 1052	D	NO	NO	YES	
423	FF 1052	F	NO	NO	YES	
424	FF 1052	D	NO	NO	YES	
425	FF 1052	D	NO	NO	YES	
426	FF 1052	D	NO	NO	YES	
427	FF 1052	D	NO	NO	YES	
428	FF 1052	D	NO	NO	YES	
429	FF 1052	D	NO	NO	YES	
430	FF 1052	D	NO	NO	YES	
431	FF 1052	D	NO	NO	YES	
432	FF 1052	D	NO	NO	YES	
433	FF 1052	D	NO	NO	YES	
439	FF 1052	K	NO	NO	YES	
446	DDG 2	K	NO	YES	NO	
450	FF 1052	D	NO	NO	YES	
452	FF 1052	D	NO	YES	NO	
455	FF 1052	D	NO	NO	YES	
456	FF 1052	D	NO	NO	YES	
457	FF 1052	D	NO	NO	YES	
461	FF 1052	D	NO	NO	YES	
463	FF 1052	D	NO	NO	YES	
464	FF 1052	D	NO	NO	YES	
465	FF 1052	D	NO	NO	YES	
468	FF 1052	F	NO	NO	YES	
471	FF 1052	D	NO	NO	YES	
472	FF 1052	F	NO	NO	YES	
473	FF 1052	D	NO	NO	YES	
474	FF 1052	D	NO	NO	YES	

TABLE H-2 (Continued)  
SIGNED SHIPALTS FOR FY 76

SHIP ALT NO.	SHIP CLASS	TYPE OF ALT	MANPOWER AND/OR TRAINING IMPLICATION	MIP	TIP	REMARKS
481	FF 1052	D	NO	NO	YES	
482	FF 1052	F	NO	NO	YES	
489	FF 1052	D	NO	NO	YES	
472	DDG 2	K	NO	YES	NO	
473	DDG 2	K	YES	YES	NO	
478	DDG 2	K	NO	YES	NO	
497	DDG 2	K	YES	NO	YES	
498	DDG 2	D	NO	NO	YES	
531	DDG 2	K	NO	NO	YES	
535	DDG 2	F	NO	NO	YES	
542	DDG 2	K	NO	NO	YES	
548	DDG 2	D	NO	YES	NO	
549	DDG 2	D	NO	YES	NO	
550	DDG 2	D	NO	YES	NO	
551	DDG 2	K	NO	YES	NO	
564	DDG 2	K	NO	YES	NO	CANCELLED
565	DDG 2	D	NO	YES	NO	
566	DDG 2	D	NO	YES	NO	
570	DDG 2	D	NO	NO	YES	
571	DDG 2	K	NO	YES	NO	
587	DDG 2	D	NO	NO	YES	
590	DDG 2	F	NO	NO	YES	
591	DDG 2	D	NO	NO	YES	
592	DDG 2	D	NO	NO	YES	
598	DDG 2	D	NO	NO	YES	
599	DDG 2	F	NO	NO	YES	
600	DDG 2	D	NO	NO	YES	
601	DDG 2	D	NO	NO	YES	
602	DDG 2	D	NO	NO	YES	
603	DDG 2	D	NO	NO	YES	
615	DDG 2	D	NO	NO	YES	
618	DDG 2	K	NO	NO	YES	

TABLE H-2 (Continued)  
SIGNED SHIPALTS FOR FY 76

SHIP ALT NO.	SHIP CLASS	TYPE OF ALT	MANPOWER AND/OR TRAINING IMPLICATION	MIP	TIP	REMARKS
619	DDG 2	K	NO	NO	YES	
636	DDG 2	D	NO	NO	YES	
639	DDG 2	K				CANCELLED
640	DDG 2	D	NO	NO	YES	
642	DDG 2	D	NO	NO	YES	
644	DDG 2	D	NO	NO	YES	
647	DDG 2	D	NO	NO	YES	
1083	CG 16	K	NO	NO	YES	
1134	CG 16	D	NO	NO	YES	
1147	CG 16	K	NO	YES	NO	
1152	CG 16	K	YES	YES	NO	
1177	CG 16	K	NO	NO	YES	
1185	CG 16	K	NO	YES	NO	
1186	CG 16	D	NO	NO	YES	
1202	CG 16	K	NO	NO	YES	CANCELLED
1223	CG 16	D	NO	YES	NO	
1229	CG 16	K	NO	NO	YES	
1231	CG 16	D	NO	NO	YES	
1236	CG 15	D	NO	NO	YES	
1237	CG 16	K	NO	NO	YES	
1272	CG 16	D	NO	NO	YES	
1274	CG 16	K	NO	YES	NO	
1275	CG 16	K	NO	NO	YES	
1276	CG 16	D	NO	NO	YES	
1277	CG 16	D	NO	NO	YES	
1279	CG 16	D	NO	NO	YES	
1280	CG 16	F	NO	NO	YES	
1281	CG 16	D	NO	NO	YES	
1307	CG 16	D	NO	NO	YES	
1308	CG 16	D	NO	NO	YES	
1317	CG 16	D	NO	NO	YES	